

astro

PHOTOMETRIC  
TEST REPORT

---

<b>Report Number</b>	GNC-1826B
<b>Customer</b>	Astro Lighting Limited
<b>Contact</b>	David Green
<b>Product Type</b>	LED Wall light
<b>Test Purpose</b>	Generation of photometric data
<b>Quote Reference</b>	Q-LUX18-300167
<b>Works Order Number</b>	WO-1826
<b>Test Item Reference</b>	TI-20034
<b>LAB Test Method Reference</b>	Goniometric (Type C) Intensity Scan - IES/LDT Files & Report - Scan Increments 15 degrees Azimuth by 2.5 degrees inclination
<b>Test Standards</b>	LM-79-08; (BS) EN 13032-4:2015; CIE S025:2015
<b>Lab Location Reference</b>	LUX-TSI
<b>Tested by</b>	Mike Sewell
<b>Date of Test</b>	19/10/2018
<b>Reviewed by</b>	Gareth Jones
<b>Number of products tested</b>	1

Address: LUX-TSI Ltd.,  
Pencoed Technology Park,  
Pencoed, Bridgend,  
CF35 5AQ, UK  
Telephone: +44 (0) 1656 864618  
Authorised by: G. Jones  
Email: [CustomerService@lux-tsi.com](mailto:CustomerService@lux-tsi.com)  
Signed: 



Parma 625

Date: 02/11/2018

### Disclaimers

This report is for the exclusive use of LUX-TSI's Customer and is provided pursuant to the agreement between LUX-TSI and its Customer. LUX-TSI's responsibility and reliability are limited to the Terms and Conditions of the agreement. LUX-TSI assumes no liability to any other party, other than the Customer in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Customer is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the LUX-TSI name or one of its marks for the sale or advertisement of the tested material, product or service must be approved in writing by LUX-TSI.

The observations and test results in this report are relevant only to the sample tested. Opinions expressed and data supplied in this report, are given in good faith, and are based on the information provided by the Customer. This report does not remove the requirement for the Customer to obtain further independent advice and in particular to instruct a notified or competent body or person to carry out further evaluation work and/or testing. Accordingly, no warranty is given, nor is any term or condition to be implied, that the product, which is the subject of this report, complies with the requirements of any EU directives.

## Nomenclature

Lamp Orientation described below relates to the position in which a lamp is designed to operate for maximum performance and safety, these include:

BD - Base Down (bulb is vertically positioned with the metal base at the bottom, glass up)

BU - Base Up (bulb is vertically positioned with the metal base at the top, glass hanging down)

HBD - Horizontal  $+15^{\circ}$  to Base Down

H45 - Horizontal to  $-45^{\circ}$  only

VBU - Vertical Base Up  $\pm 15^{\circ}$

VBD - Vertical Base Down  $\pm 15^{\circ}$

HBU - Base Up  $\pm 90^{\circ}$  (bulb can be operated in a base up or horizontal position)

HOR - Horizontal Burn (bulb is positioned with the metal base parallel to the ground)

H75 - Horizontal  $\pm 75^{\circ}$  (bulb should not be operated within  $15^{\circ}$  of vertical)

U - Universal Burn (burn can be operated in any position)

---

## Test Conditions

Measurements were made with an ambient temperature of  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . Measurements were taken only after sufficient time for thermal stabilisation has been allowed. Thermal stabilisation according to LM-79-08 was achieved before measurements are measured and reported.

---

## Calibrations

The far field Type C Goniophotometer is calibrated using an intensity lamp calibrated by a NVLAP accredited calibration laboratory.

---

## Test Equipment

UL LSI Custom Far-Field Type C Moving Mirror Goniophotometer measures intensity as a function of angle. On-axis spectral measurements taken using spectrometer, for which these measurements and outputs are not accredited.

---

## Data Formats

IES (15 deg azimuth and 2.5 deg inclination) and LDT (15 deg C planes and 2.5 deg gamma angles)

Spectral Data file from which the calculation of chromaticity and CRI etc. have been performed and the derived results from the LightMtrX software are provided as a text file format.

All photometric data for LED products will be provided in ABSOLUTE photometric format and all non-LED data will be in relative photometric format with lamp lumens measured separately, where possible, for LOR estimation.

Product Name	Parma 625
Part/Serial Number	1187027
Type of Product	LED Wall light
Base Type	Not Applicable - Luminaire
Driver Type	Internal
Test Time	30 mins
Operating Orientation	Base Up
Test Orientation	Base Up
Ambient Temperature	25.3°C
Manufacturer	Astro Lighting Limited
Date of Manufacture	Not Available
Thermal Management	Passive
Dimmable	No
Pre-Burning Time	0 hours
Stabilisation Time	60 mins
Humidity	28.7% RH
Averaging Applied	NONE

Driver Details		
Manufacturer	Tridonic	
Model	LCBU 25W 12V BASIC phase-cut SR	
Part/Serial #	N/A	
Rated Voltage	220-240V	
Output	Current	N/A
	Voltage	12.0 V

#### Declaration

LUX-TSI were unable to view the driver, the driver details stated on Report GNC-1826 were provided by Astro Lighting.

Photometric Measurements	
Luminous Flux	1497 lm
Luminous Efficacy	51 lm/W

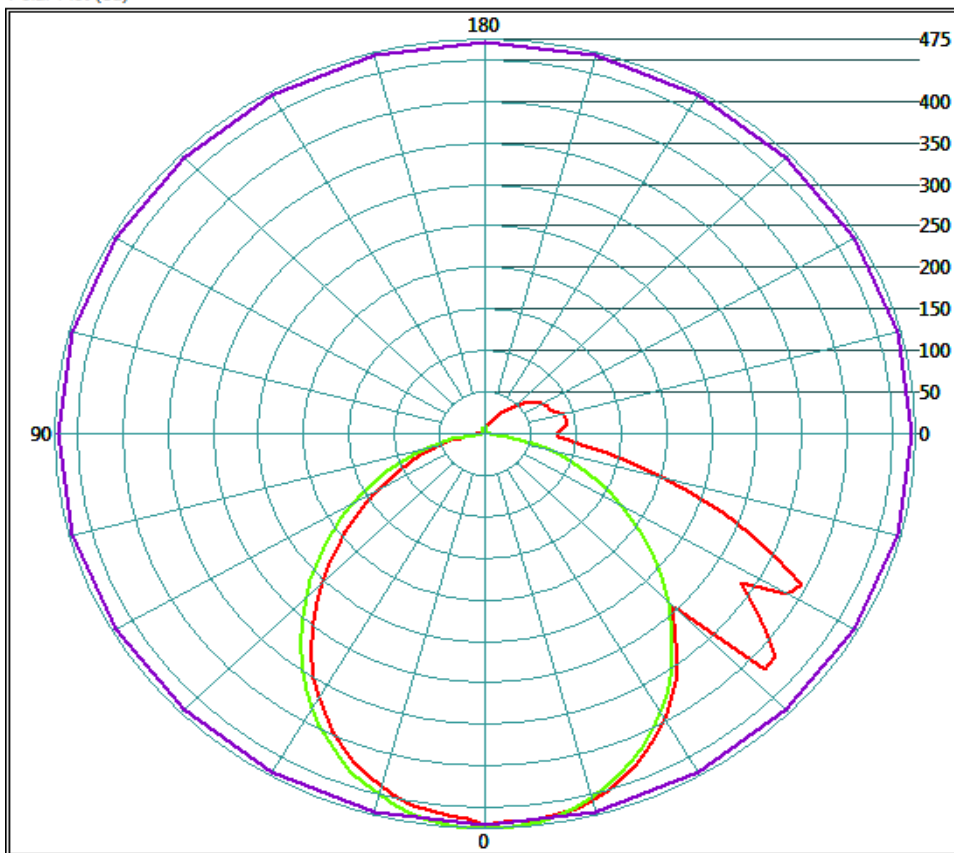
Dimension	Sample	Luminous Opening
Diameter/Width	80 mm	70 mm
Length	620 mm	540 mm
Height/Depth	80 mm	0 mm

Electrical Measurements	
Frequency	50 Hz
Voltage	229.9 V
Current	0.133 A
Power	29.5 W
Power Factor	0.966
Apparent Power	30.6 VA

### Goniophotometric Measurements

Beam Angle	Horizontal	102°
	Vertical	120°
On-axis Intensity		471 cd
Peak Intensity		475 cd
Peak Direction	Horizontal	270°
	Vertical	3°

Polar Plot (cd)



Mounting Height (m)	Beam Width (m)		Projected Illuminance (lux)
	C0-C180 plane	C90-270 plane	
0.5	1.2	1.7	1883
1	2.5	3.4	471
2	5.0	6.9	118
3	7.4	10.3	52
4	9.9	13.8	29
5	12.4	17.2	19
7.5	18.6	25.8	8
10	24.8	34.4	5
20	49.6	68.8	1

## Appendices & non-accredited results

### *On-axis Spectral Measurement*

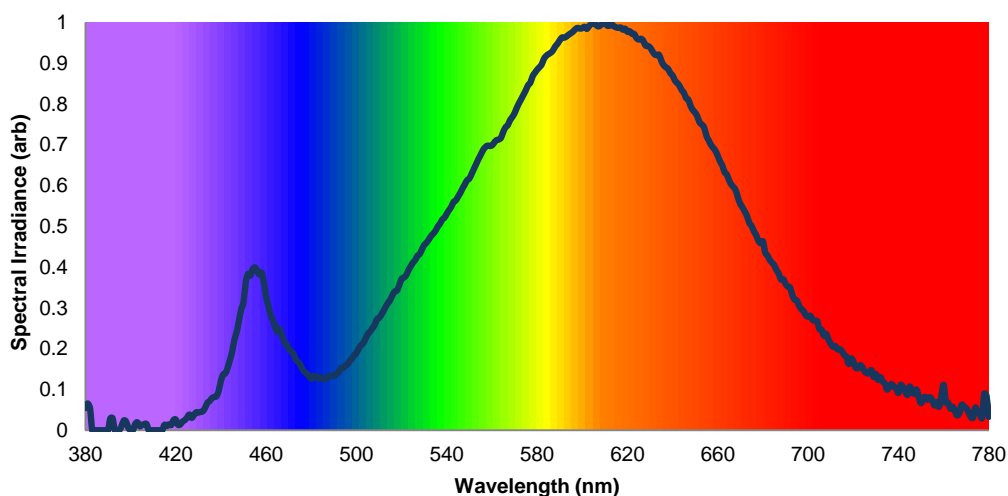
The following data was determined from an on-axis spectral measurement using a SP1000 spectrometer at a distance of 2000mm, for which these measurements and outputs are not accredited.  
Results may differ if compared to spatially averaged colourimetric result (e.g. measured in an integrating sphere).

LM79 requires spatially averaged colourimetric results (i.e. from a sphere, or from a full goni colourimetric scan).

The colourimetric results in this report do not follow those requirements.

BS (EN) 13032 and CIE S025 do not state this requirement.

**Spectral Irradiance versus Wavelength**



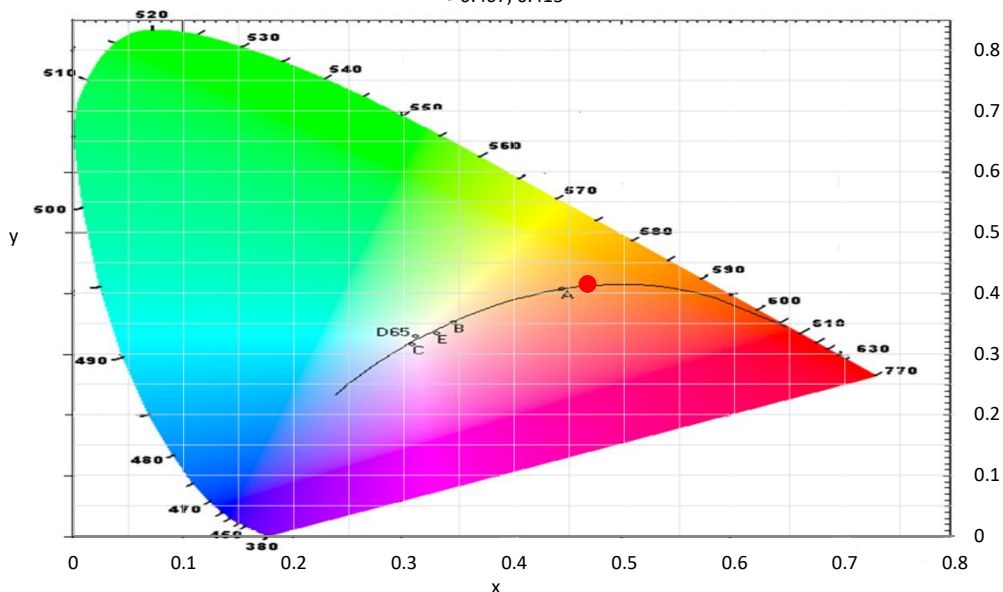
Colour Rendering Index Detail			
R1	78	R8	62
R2	88	R9	16
R3	96	R10	71
R4	76	R11	71
R5	76	R12	60
R6	83	R13	80
R7	85	R14	97

Colorimetric Details	
CCT	2642K
CRI (Ra)	80

Chromaticity Coordinates		
CIE 1931	x	0.4667
	y	0.4153
CIE 1960	u	0.2648
	v	0.3534
CIE 1976	u'	0.2648
	v'	0.5302
Duv		0.0012

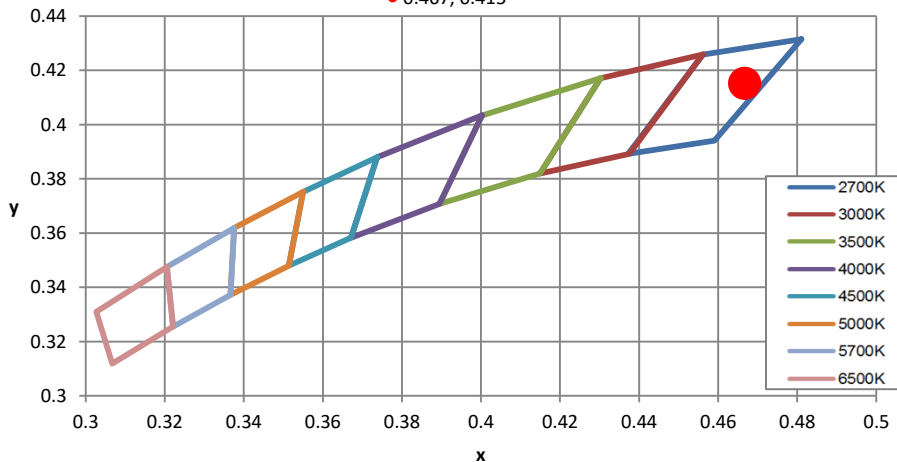
CIE 1931 Colour Chart

• 0.467, 0.415



CIE 1931 x, y Chromaticity Diagram - Nominal CCT Quadrangles

• 0.467, 0.415



### Spectral Power Distribution

$\lambda$ (nm)	Arb units	$\lambda$ (nm)	Arb units	$\lambda$ (nm)	Arb units	$\lambda$ (nm)	Arb units
380	5.45E-02	430	4.35E-02	480	1.26E-01	530	4.54E-01
381	6.57E-02	431	4.50E-02	481	1.33E-01	531	4.60E-01
382	5.43E-02	432	4.68E-02	482	1.32E-01	532	4.68E-01
383	0.00E+00	433	5.53E-02	483	1.26E-01	533	4.76E-01
384	0.00E+00	434	6.72E-02	484	1.30E-01	534	4.82E-01
385	0.00E+00	435	7.16E-02	485	1.28E-01	535	4.89E-01
386	0.00E+00	436	7.89E-02	486	1.25E-01	536	4.99E-01
387	0.00E+00	437	8.13E-02	487	1.29E-01	537	5.06E-01
388	0.00E+00	438	8.35E-02	488	1.32E-01	538	5.17E-01
389	0.00E+00	439	9.65E-02	489	1.34E-01	539	5.22E-01
390	0.00E+00	440	1.21E-01	490	1.34E-01	540	5.31E-01
391	2.90E-02	441	1.37E-01	491	1.38E-01	541	5.40E-01
392	2.94E-02	442	1.40E-01	492	1.42E-01	542	5.48E-01
393	0.00E+00	443	1.54E-01	493	1.52E-01	543	5.60E-01
394	0.00E+00	444	1.73E-01	494	1.53E-01	544	5.64E-01
395	0.00E+00	445	1.94E-01	495	1.58E-01	545	5.73E-01
396	1.08E-02	446	2.23E-01	496	1.62E-01	546	5.82E-01
397	2.42E-02	447	2.42E-01	497	1.70E-01	547	5.93E-01
398	2.11E-02	448	2.70E-01	498	1.76E-01	548	6.03E-01
399	5.67E-03	449	2.97E-01	499	1.84E-01	549	6.13E-01
400	0.00E+00	450	3.14E-01	500	1.90E-01	550	6.17E-01
401	0.00E+00	451	3.64E-01	501	2.00E-01	551	6.29E-01
402	1.52E-02	452	3.83E-01	502	2.08E-01	552	6.41E-01
403	1.95E-02	453	3.79E-01	503	2.14E-01	553	6.53E-01
404	9.90E-03	454	3.94E-01	504	2.24E-01	554	6.65E-01
405	1.28E-02	455	3.99E-01	505	2.36E-01	555	6.75E-01
406	1.51E-02	456	3.92E-01	506	2.42E-01	556	6.87E-01
407	1.53E-02	457	3.82E-01	507	2.50E-01	557	6.94E-01
408	0.00E+00	458	3.87E-01	508	2.58E-01	558	6.98E-01
409	0.00E+00	459	3.62E-01	509	2.71E-01	559	6.97E-01
410	0.00E+00	460	3.27E-01	510	2.76E-01	560	6.98E-01
411	0.00E+00	461	3.05E-01	511	2.83E-01	561	7.05E-01
412	0.00E+00	462	2.82E-01	512	2.93E-01	562	7.11E-01
413	0.00E+00	463	2.69E-01	513	3.03E-01	563	7.13E-01
414	0.00E+00	464	2.53E-01	514	3.12E-01	564	7.17E-01
415	1.34E-02	465	2.41E-01	515	3.20E-01	565	7.32E-01
416	1.03E-02	466	2.49E-01	516	3.32E-01	566	7.43E-01
417	1.47E-02	467	2.32E-01	517	3.40E-01	567	7.48E-01
418	1.28E-02	468	2.17E-01	518	3.43E-01	568	7.60E-01
419	2.52E-02	469	2.11E-01	519	3.57E-01	569	7.68E-01
420	2.62E-02	470	2.00E-01	520	3.71E-01	570	7.77E-01
421	1.34E-02	471	1.93E-01	521	3.75E-01	571	7.91E-01
422	1.44E-02	472	1.89E-01	522	3.80E-01	572	8.02E-01
423	2.15E-02	473	1.74E-01	523	3.93E-01	573	8.12E-01
424	2.49E-02	474	1.68E-01	524	4.02E-01	574	8.23E-01
425	3.12E-02	475	1.62E-01	525	4.11E-01	575	8.34E-01
426	3.86E-02	476	1.50E-01	526	4.17E-01	576	8.46E-01
427	3.03E-02	477	1.43E-01	527	4.28E-01	577	8.52E-01
428	3.71E-02	478	1.38E-01	528	4.32E-01	578	8.68E-01
429	4.40E-02	479	1.33E-01	529	4.44E-01	579	8.76E-01
						580	8.84E-01

### Spectral Power Distribution

$\lambda$ (nm)	Arb units	$\lambda$ (nm)	Arb units	$\lambda$ (nm)	Arb units	$\lambda$ (nm)	Arb units
581	8.90E-01	631	9.30E-01	681	4.36E-01	731	1.23E-01
582	8.97E-01	632	9.22E-01	682	4.29E-01	732	1.30E-01
583	9.10E-01	633	9.20E-01	683	4.18E-01	733	1.20E-01
584	9.18E-01	634	9.21E-01	684	4.11E-01	734	1.14E-01
585	9.22E-01	635	9.06E-01	685	4.05E-01	735	9.97E-02
586	9.26E-01	636	8.95E-01	686	3.93E-01	736	1.09E-01
587	9.31E-01	637	8.90E-01	687	3.84E-01	737	1.13E-01
588	9.41E-01	638	8.86E-01	688	3.70E-01	738	1.06E-01
589	9.48E-01	639	8.75E-01	689	3.70E-01	739	1.03E-01
590	9.56E-01	640	8.70E-01	690	3.59E-01	740	9.13E-02
591	9.63E-01	641	8.58E-01	691	3.52E-01	741	1.11E-01
592	9.63E-01	642	8.52E-01	692	3.50E-01	742	1.05E-01
593	9.66E-01	643	8.45E-01	693	3.31E-01	743	9.65E-02
594	9.70E-01	644	8.34E-01	694	3.20E-01	744	8.66E-02
595	9.74E-01	645	8.27E-01	695	3.18E-01	745	1.07E-01
596	9.78E-01	646	8.14E-01	696	3.05E-01	746	9.33E-02
597	9.84E-01	647	8.10E-01	697	2.97E-01	747	9.00E-02
598	9.87E-01	648	7.95E-01	698	2.92E-01	748	9.99E-02
599	9.85E-01	649	7.85E-01	699	2.82E-01	749	8.12E-02
600	9.86E-01	650	7.79E-01	700	2.78E-01	750	6.66E-02
601	9.90E-01	651	7.69E-01	701	2.81E-01	751	7.93E-02
602	9.84E-01	652	7.54E-01	702	2.71E-01	752	8.14E-02
603	9.91E-01	653	7.49E-01	703	2.68E-01	753	7.48E-02
604	9.96E-01	654	7.42E-01	704	2.67E-01	754	8.10E-02
605	9.97E-01	655	7.22E-01	705	2.48E-01	755	7.29E-02
606	9.95E-01	656	7.11E-01	706	2.46E-01	756	6.07E-02
607	9.90E-01	657	7.00E-01	707	2.32E-01	757	6.90E-02
608	9.93E-01	658	6.93E-01	708	2.36E-01	758	5.77E-02
609	9.98E-01	659	6.85E-01	709	2.23E-01	759	8.44E-02
610	1.00E+00	660	6.73E-01	710	2.12E-01	760	1.11E-01
611	9.92E-01	661	6.59E-01	711	2.05E-01	761	6.83E-02
612	9.92E-01	662	6.49E-01	712	2.06E-01	762	6.77E-02
613	9.96E-01	663	6.33E-01	713	1.98E-01	763	5.32E-02
614	9.91E-01	664	6.27E-01	714	1.99E-01	764	5.77E-02
615	9.88E-01	665	6.13E-01	715	1.93E-01	765	4.73E-02
616	9.87E-01	666	6.02E-01	716	1.84E-01	766	3.64E-02
617	9.88E-01	667	5.96E-01	717	1.80E-01	767	4.26E-02
618	9.82E-01	668	5.88E-01	718	1.63E-01	768	6.26E-02
619	9.85E-01	669	5.69E-01	719	1.76E-01	769	5.81E-02
620	9.77E-01	670	5.55E-01	720	1.69E-01	770	5.39E-02
621	9.78E-01	671	5.46E-01	721	1.54E-01	771	4.46E-02
622	9.72E-01	672	5.36E-01	722	1.52E-01	772	3.26E-02
623	9.72E-01	673	5.24E-01	723	1.60E-01	773	3.06E-02
624	9.62E-01	674	5.08E-01	724	1.55E-01	774	5.57E-02
625	9.58E-01	675	5.01E-01	725	1.44E-01	775	4.43E-02
626	9.60E-01	676	4.88E-01	726	1.40E-01	776	4.13E-02
627	9.55E-01	677	4.78E-01	727	1.40E-01	777	3.02E-02
628	9.44E-01	678	4.65E-01	728	1.48E-01	778	8.94E-02
629	9.42E-01	679	4.59E-01	729	1.31E-01	779	8.40E-02
630	9.39E-01	680	4.63E-01	730	1.38E-01	780	3.29E-02

### Measurement Uncertainty

The following is the reported expanded uncertainty of the UL 6440T Type C Mirror Goniophotometer.

Parameter	Uncertainty
Total Luminous Flux (%)	$\pm 4.9$
Luminous Intensity (%)	$\pm 4.9$
Temperature ( $^{\circ}\text{C}$ )	$\pm 1.0$
Voltage DC TY720 (%)	$\pm 0.017$
Current DC TY720 (%)	$\pm 0.10$
Voltage AC WT210 (%)	$\pm 0.059$
Current AC WT210 (%)	$\pm 0.025$
Power AC WT210 (%)	$\pm 0.23$
Frequency (50/60 Hz) WT210 (%)	$\pm 0.004$
Power Factor WT210 (%)	$\pm 0.06$

The reported expanded uncertainty is based on the combined standard uncertainty multiplied by a coverage factor of  $k = 2$ . This value of  $k$  gives a coverage probability of approximately 95%, assuming a normal distribution. This determination of the measurement uncertainty has been done in accordance with international requirements including UKAS, BIPM Guide to the Expression of Uncertainty in Measurement and CIE 198:2011 and CIE S 025/E:2015.

Electrical measurement equipment used for the determination of results for this report, are compliant and meet the performance requirements of the measurement standards used.

----- END OF REPORT -----