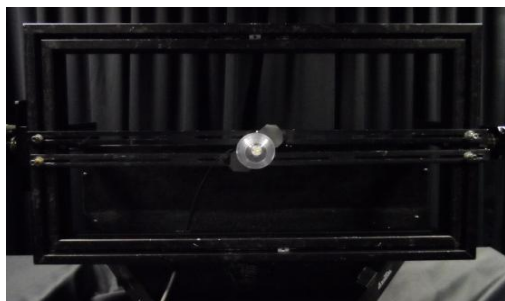


Report Number	TRN-12271
Customer	LITE
Contact	Alistair Fletcher
Product Type	LED Festoon
Test Purpose	Generation of Photometric Data
Sales Order Ref	Q-LUX2013-0863
Works Order Number	WO-2362B
Test Item Reference	TI-1782
LAB Test Method Reference	TES-1003
Test Standards	LM-79-08
Lab Location Reference	LUX-OPC
Tested by	Andrew Thomas
Date of Test	09/04/2013
Analysed by	Paul Ottavio
Number of products tested	1

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Authorised by: David Chan
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Signed: 



Festoon LED

Date: 10/04/2013

Disclaimers

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This report covers some data that is not compliant with IESNA LM-79-08. (The use of type B goniometry and near-field imaging is not currently an approved methodology for generation of far-field intensity profile for use in IES and LDT files.)

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° to Base Down

H45 - Horizontal to -45° only

VBU - Vertical Base Up ±15°

VBD - Vertical Base Down ±15°

HBU - Base Up +/- 90° (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 +/- 75° (bulb should not be operated within 15° of vertical)

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

Test Conditions

Measurements were made with an ambient temperature of 25°C +/- 1°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 imaging colorimeter has been calibrated using a uniform light source traceable to NIST that carries out a flat field correction.

Test Equipment

Radiant Imaging NFMS-0800 near-field goniometric system with imaging colorimeter was used. This system measures the luminous intensity as a function of the angle of incidence specified.

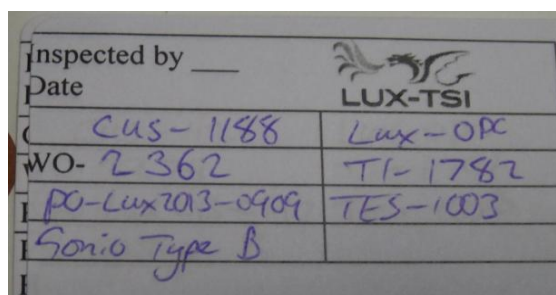
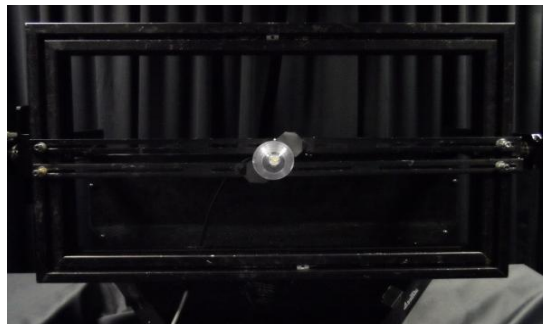
Data Formats

IES (1 deg azimuth and inclination) and LDT (2deg azimuth and 10deg polar)

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.

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.

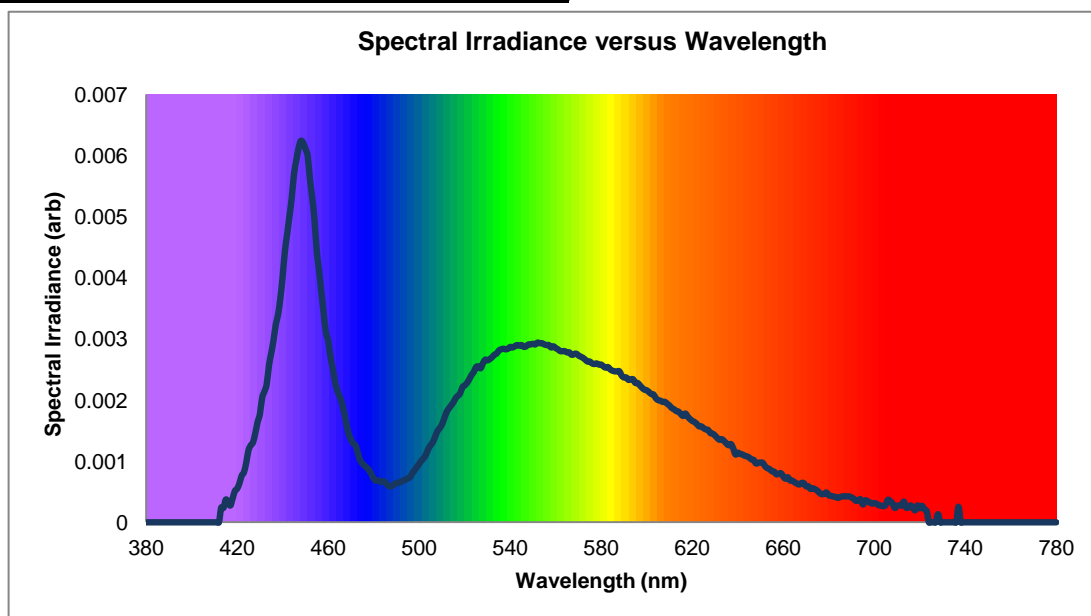
Product Name	Festoon LED
Part/Serial Number	N/A
Type of Product	LED Festoon
Base Type	LED Festoon - NA
Driver Type	External DC (54VDC)
Test Time	49 mins
Operating Orientation	Any - Festoon
Test Orientation	Horizontal
Ambient Temperature	24.3°C
Manufacturer	LITE
Date of Manufacture	2013
Thermal Management	Passive
Dimmable	No
Pre-Burning Time	0 hours
Stabilisation Time	30 mins
Humidity	< 65% RH



Photometric Measurements	
Luminous Flux	79 lm
Luminous Efficacy	85.43 lm/W

Dimension	Sample	Luminous Opening
Diameter/Width	60 mm Φ	60 mm Φ
Length		
Height/Depth	80 mm	60 mm

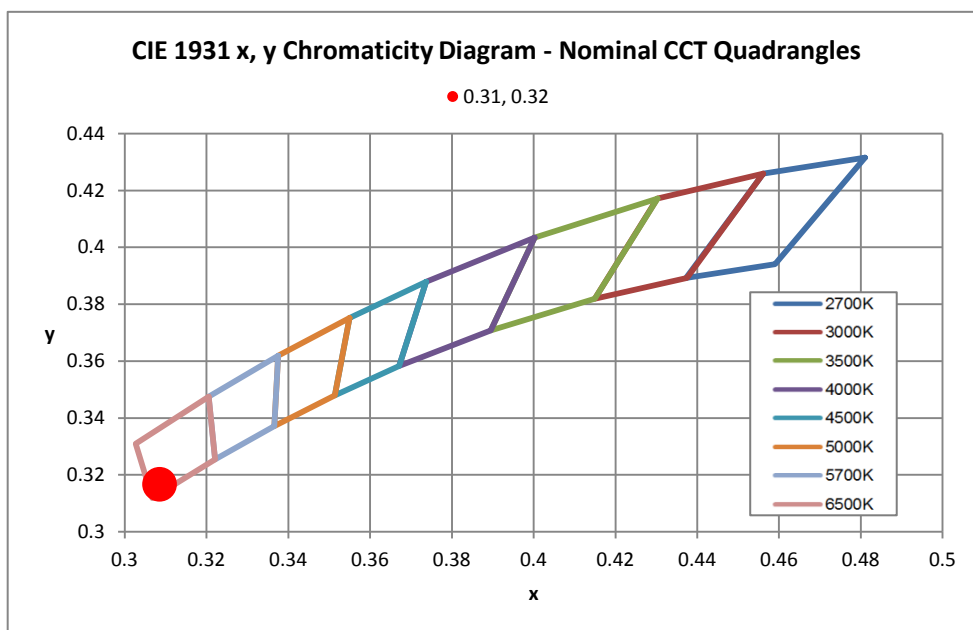
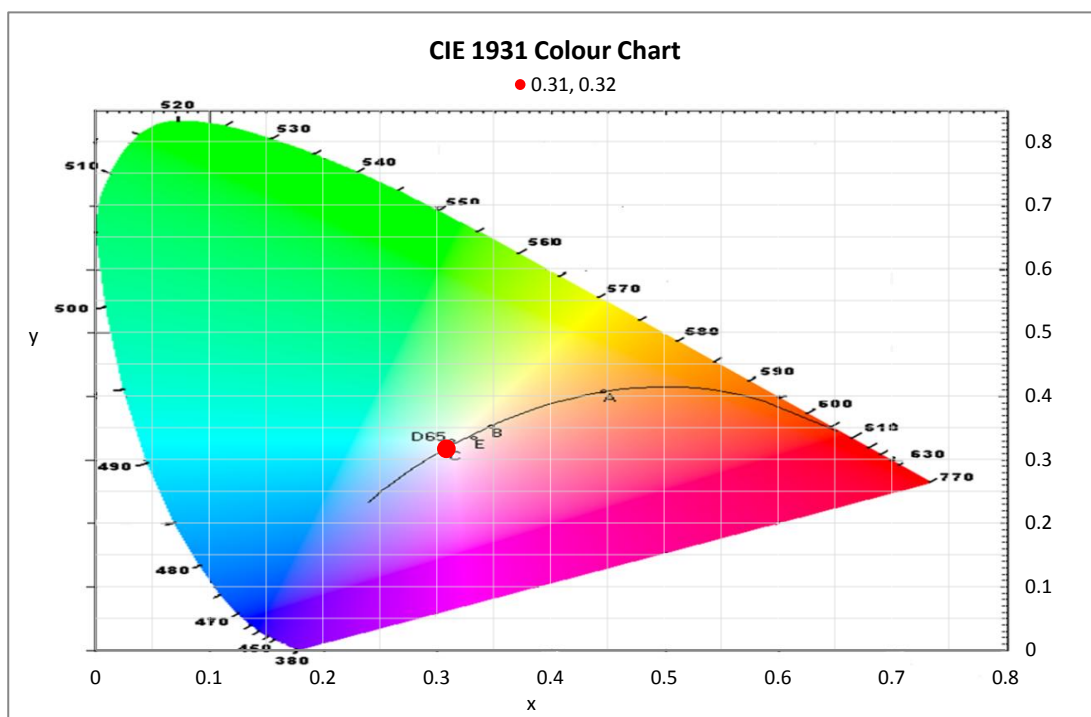
DC Electrical Measurements	
Frequency	Constant
Voltage	54.32 V
Current	0.017 A
Power	0.92 W
Power Factor	N/A
Peak Power VA	N/A



Colour Rendering Index Detail			
R1	73.6	R8	67.2
R2	75.7	R9	-9.2
R3	73.2	R10	38.5
R4	75.6	R11	72.8
R5	73.9	R12	41.5
R6	65.8	R13	73.0
R7	81.2	R14	84.5

Colorimetric Details	
CCT	6860K
CRI (Ra)	73

Chromaticity Coordinates		
CIE 1931	x	0.3085
	y	0.3167
CIE 1960	u	0.1996
	v	0.3073
CIE 1976	u'	0.1996
	v'	0.4610
Duv		0.0016

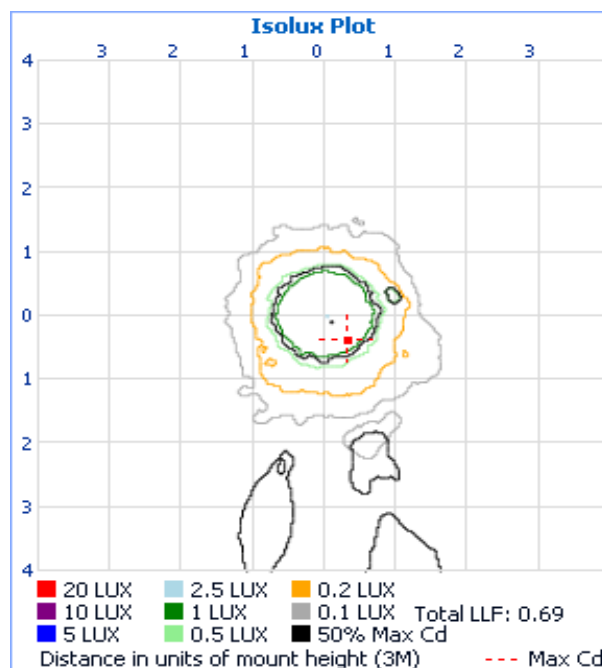
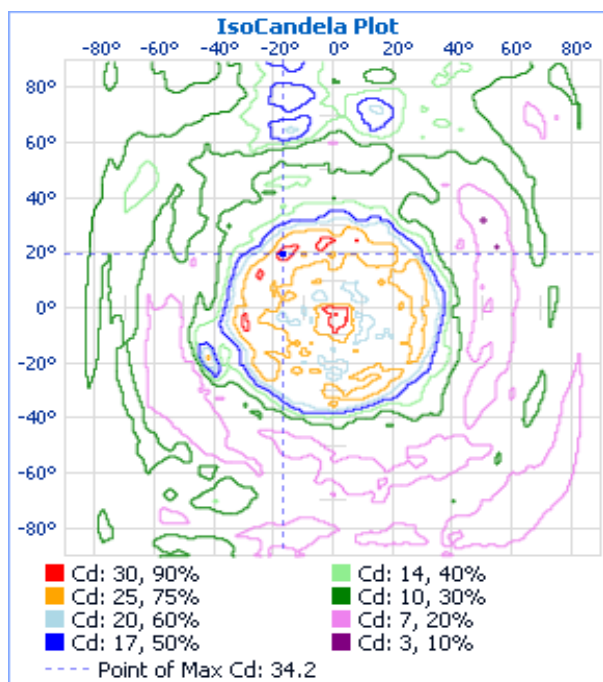
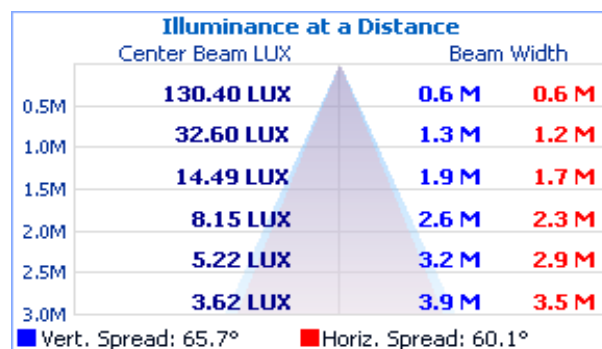
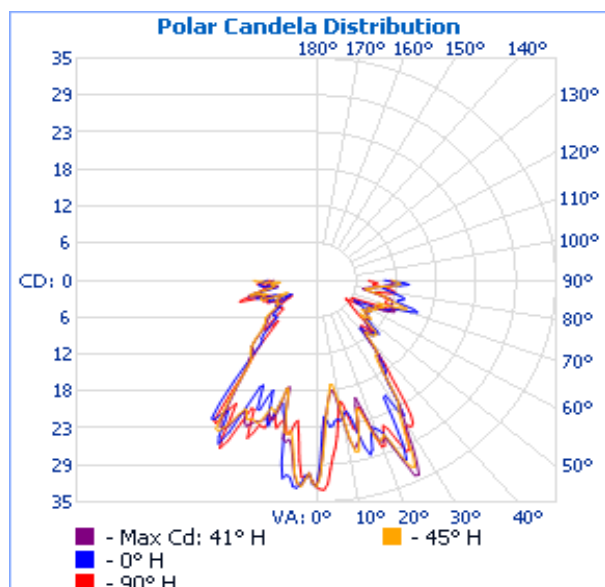


Goniophotometric Measurements

Beam Angle	Horizontal	60°
	Vertical	66°
On-axis Intensity		33 cd
Peak Intensity		34 cd
Peak Direction	Horizontal	41°
	Vertical	26°

Centre Point Measurements

Lux	2.9 lx
At Distance of	4.011 m





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Test Report Number: TRN-12271
Test Item: TI-1782

Test Report Number: TRN-12271
Test Item: TI-1782

Spectral Power Distribution

λ (nm)	W		λ (nm)	W		λ (nm)	W		λ (nm)	W	
380	0.000000		430	1.77E-03		480	7.15E-04		530	2.65E-03	
381	0.00E+00		431	2.04E-03		481	6.82E-04		531	2.67E-03	
382	0.00E+00		432	2.14E-03		482	6.85E-04		532	2.70E-03	
383	0.00E+00		433	2.26E-03		483	6.63E-04		533	2.74E-03	
384	0.00E+00		434	2.57E-03		484	6.71E-04		534	2.76E-03	
385	0.00E+00		435	2.77E-03		485	6.58E-04		535	2.81E-03	
386	0.00E+00		436	2.98E-03		486	6.12E-04		536	2.83E-03	
387	0.00E+00		437	3.24E-03		487	5.86E-04		537	2.84E-03	
388	0.00E+00		438	3.40E-03		488	5.95E-04		538	2.83E-03	
389	0.00E+00		439	3.67E-03		489	6.22E-04		539	2.84E-03	
390	0.00E+00		440	4.02E-03		490	6.44E-04		540	2.87E-03	
391	0.00E+00		441	4.44E-03		491	6.45E-04		541	2.86E-03	
392	0.00E+00		442	4.72E-03		492	6.65E-04		542	2.88E-03	
393	0.00E+00		443	5.01E-03		493	6.81E-04		543	2.90E-03	
394	0.00E+00		444	5.31E-03		494	6.99E-04		544	2.89E-03	
395	0.00E+00		445	5.70E-03		495	7.18E-04		545	2.90E-03	
396	0.00E+00		446	5.92E-03		496	7.39E-04		546	2.87E-03	
397	0.00E+00		447	6.12E-03		497	8.06E-04		547	2.88E-03	
398	0.00E+00		448	6.24E-03		498	8.51E-04		548	2.91E-03	
399	0.00E+00		449	6.21E-03		499	9.07E-04		549	2.91E-03	
400	0.00E+00		450	6.11E-03		500	9.58E-04		550	2.92E-03	
401	0.00E+00		451	6.00E-03		501	1.01E-03		551	2.91E-03	
402	0.00E+00		452	5.61E-03		502	1.05E-03		552	2.94E-03	
403	0.00E+00		453	5.31E-03		503	1.11E-03		553	2.93E-03	
404	0.00E+00		454	4.95E-03		504	1.20E-03		554	2.93E-03	
405	0.00E+00		455	4.43E-03		505	1.26E-03		555	2.91E-03	
406	0.00E+00		456	4.12E-03		506	1.31E-03		556	2.90E-03	
407	0.00E+00		457	3.77E-03		507	1.40E-03		557	2.90E-03	
408	0.00E+00		458	3.43E-03		508	1.49E-03		558	2.86E-03	
409	0.00E+00		459	3.11E-03		509	1.54E-03		559	2.88E-03	
410	0.00E+00		460	2.98E-03		510	1.60E-03		560	2.85E-03	
411	0.00E+00		461	2.71E-03		511	1.70E-03		561	2.83E-03	
412	0.00E+00		462	2.52E-03		512	1.80E-03		562	2.80E-03	
413	2.42E-04		463	2.30E-03		513	1.86E-03		563	2.80E-03	
414	2.35E-04		464	2.16E-03		514	1.91E-03		564	2.80E-03	
415	3.71E-04		465	2.06E-03		515	1.96E-03		565	2.78E-03	
416	3.38E-04		466	1.96E-03		516	2.03E-03		566	2.78E-03	
417	2.74E-04		467	1.80E-03		517	2.07E-03		567	2.74E-03	
418	3.86E-04		468	1.61E-03		518	2.11E-03		568	2.75E-03	
419	5.12E-04		469	1.45E-03		519	2.21E-03		569	2.76E-03	
420	5.50E-04		470	1.36E-03		520	2.24E-03		570	2.73E-03	
421	6.37E-04		471	1.29E-03		521	2.28E-03		571	2.71E-03	
422	7.63E-04		472	1.26E-03		522	2.34E-03		572	2.69E-03	
423	8.18E-04		473	1.14E-03		523	2.41E-03		573	2.66E-03	
424	9.75E-04		474	1.02E-03		524	2.46E-03		574	2.63E-03	
425	1.18E-03		475	9.64E-04		525	2.54E-03		575	2.63E-03	
426	1.26E-03		476	9.27E-04		526	2.55E-03		576	2.60E-03	
427	1.31E-03		477	8.95E-04		527	2.52E-03		577	2.59E-03	
428	1.46E-03		478	8.50E-04		528	2.60E-03		578	2.60E-03	
429	1.64E-03		479	7.88E-04		529	2.66E-03		579	2.58E-03	
									580	2.58E-03	

Spectral Power Distribution										
λ (nm)	W		λ (nm)	W		λ (nm)	W		λ (nm)	W
581	2.55E-03		631	1.38E-03		681	4.33E-04		731	0.00E+00
582	2.53E-03		632	1.35E-03		682	4.22E-04		732	0.00E+00
583	2.54E-03		633	1.36E-03		683	4.16E-04		733	0.00E+00
584	2.50E-03		634	1.33E-03		684	4.00E-04		734	0.00E+00
585	2.48E-03		635	1.29E-03		685	4.14E-04		735	0.00E+00
586	2.47E-03		636	1.26E-03		686	4.24E-04		736	0.00E+00
587	2.47E-03		637	1.28E-03		687	4.24E-04		737	2.55E-04
588	2.47E-03		638	1.21E-03		688	4.24E-04		738	0.00E+00
589	2.40E-03		639	1.11E-03		689	4.24E-04		739	0.00E+00
590	2.37E-03		640	1.14E-03		690	4.07E-04		740	0.00E+00
591	2.37E-03		641	1.12E-03		691	3.84E-04		741	0.00E+00
592	2.33E-03		642	1.11E-03		692	3.50E-04		742	0.00E+00
593	2.34E-03		643	1.09E-03		693	3.63E-04		743	0.00E+00
594	2.34E-03		644	1.08E-03		694	3.76E-04		744	0.00E+00
595	2.28E-03		645	1.06E-03		695	2.91E-04		745	0.00E+00
596	2.28E-03		646	1.03E-03		696	3.57E-04		746	0.00E+00
597	2.24E-03		647	1.02E-03		697	3.49E-04		747	0.00E+00
598	2.20E-03		648	9.63E-04		698	3.25E-04		748	0.00E+00
599	2.17E-03		649	9.73E-04		699	3.06E-04		749	0.00E+00
600	2.16E-03	650	9.78E-04	700	3.14E-04	750	0.00E+00			
601	2.13E-03	651	9.73E-04	701	3.04E-04	751	0.00E+00			
602	2.10E-03	652	9.18E-04	702	2.79E-04	752	0.00E+00			
603	2.09E-03	653	8.87E-04	703	2.74E-04	753	0.00E+00			
604	2.03E-03	654	8.70E-04	704	2.63E-04	754	0.00E+00			
605	2.00E-03	655	8.36E-04	705	2.83E-04	755	0.00E+00			
606	1.99E-03	656	8.28E-04	706	3.69E-04	756	0.00E+00			
607	1.97E-03	657	7.86E-04	707	3.44E-04	757	0.00E+00			
608	1.97E-03	658	7.93E-04	708	3.10E-04	758	0.00E+00			
609	1.94E-03	659	8.04E-04	709	2.35E-04	759	0.00E+00			
610	1.91E-03	660	7.48E-04	710	2.66E-04	760	0.00E+00			
611	1.87E-03	661	7.13E-04	711	2.79E-04	761	0.00E+00			
612	1.85E-03	662	7.38E-04	712	2.76E-04	762	0.00E+00			
613	1.82E-03	663	6.85E-04	713	3.39E-04	763	0.00E+00			
614	1.81E-03	664	6.81E-04	714	2.41E-04	764	0.00E+00			
615	1.77E-03	665	6.55E-04	715	2.44E-04	765	0.00E+00			
616	1.74E-03	666	6.35E-04	716	2.78E-04	766	0.00E+00			
617	1.78E-03	667	6.18E-04	717	2.35E-04	767	0.00E+00			
618	1.73E-03	668	6.43E-04	718	1.97E-04	768	0.00E+00			
619	1.69E-03	669	6.42E-04	719	2.77E-04	769	0.00E+00			
620	1.66E-03	670	5.90E-04	720	2.30E-04	770	0.00E+00			
621	1.64E-03	671	5.91E-04	721	2.70E-04	771	0.00E+00			
622	1.61E-03	672	5.46E-04	722	2.15E-04	772	0.00E+00			
623	1.57E-03	673	5.57E-04	723	1.87E-04	773	0.00E+00			
624	1.57E-03	674	5.40E-04	724	0.00E+00	774	0.00E+00			
625	1.54E-03	675	5.17E-04	725	0.00E+00	775	0.00E+00			
626	1.52E-03	676	4.80E-04	726	0.00E+00	776	0.00E+00			
627	1.51E-03	677	4.60E-04	727	0.00E+00	777	0.00E+00			
628	1.46E-03	678	4.67E-04	728	1.34E-04	778	0.00E+00			
629	1.45E-03	679	4.88E-04	729	0.00E+00	779	0.00E+00			
630	1.42E-03	680	4.42E-04	730	0.00E+00	780	0.00E+00			

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