

Table 2.13(g) Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: London (London Weather Centre) (1996–2005)

Month	Orientation		Daily mean irradiance ($\text{W}\cdot\text{m}^{-2}$) and mean hourly irradiance ($\text{W}\cdot\text{m}^{-2}$) for the 21st day of the given month																					
			Mean	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030		
January	Normal to beam		333	0	0	0	0	0	0	0	0	381	632	680	681	608	350	0	0	0	0	0	0	
	N	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	15	0	0	0	0	0	0	0	23	42	56	66	66	56	42	21	0	0	0	0	0	0
	NE	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	15	0	0	0	0	0	0	0	23	42	56	66	66	56	42	21	0	0	0	0	0	0
	E	Beam	22	0	0	0	0	0	0	0	218	227	84	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	20	0	0	0	0	0	0	23	101	98	74	66	56	42	21	0	0	0	0	0	0	0
	SE	Beam	88	0	0	0	0	0	0	0	369	559	512	394	229	55	0	0	0	0	0	0	0	0
		Diffuse	34	0	0	0	0	0	0	23	142	170	168	143	100	59	21	0	0	0	0	0	0	0
	Sunrise: 0752 Sunset: 1630	S	Beam	124	0	0	0	0	0	0	0	304	563	641	641	542	278	0	0	0	0	0	0	0
			Diffuse	43	0	0	0	0	0	0	23	124	171	197	197	168	121	21	0	0	0	0	0	0
		SW	Beam	87	0	0	0	0	0	0	0	60	238	394	512	538	338	0	0	0	0	0	0	0
			Diffuse	34	0	0	0	0	0	0	23	59	100	142	169	168	138	21	0	0	0	0	0	0
		W	Beam	21	0	0	0	0	0	0	0	0	0	0	84	219	200	0	0	0	0	0	0	0
			Diffuse	20	0	0	0	0	0	0	23	42	56	66	74	97	99	21	0	0	0	0	0	0
		NW	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Diffuse	15	0	0	0	0	0	0	23	42	56	66	66	56	42	21	0	0	0	0	0	0
		Horiz.	Beam	38	0	0	0	0	0	0	3	75	173	214	214	167	69	2	0	0	0	0	0	0
Horiz.		Diffuse	24	0	0	0	0	0	0	37	75	84	97	97	85	78	34	0	0	0	0	0	0	
Horiz.		Global	63	0	0	0	0	0	0	41	151	257	311	311	252	147	36	0	0	0	0	0	0	
February	Normal to beam		419	0	0	0	0	0	294	562	685	701	701	682	615	364	0	0	0	0	0	0	0	
	N	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	28	0	0	0	0	0	20	49	68	89	104	107	88	68	48	20	0	0	0	0	0	0
	NE	Beam	2	0	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	28	0	0	0	0	0	20	64	68	89	104	107	88	68	48	20	0	0	0	0	0	0
	E	Beam	38	0	0	0	0	0	0	229	336	258	90	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	35	0	0	0	0	0	20	119	138	133	109	107	88	68	48	20	0	0	0	0	0	0
	Sunrise: 0702 Sunset: 1725	SE	Beam	106	0	0	0	0	0	0	284	526	582	499	372	217	55	0	0	0	0	0	0	0
			Diffuse	50	0	0	0	0	0	20	134	181	205	209	183	123	72	48	20	0	0	0	0	0
		S	Beam	150	0	0	0	0	0	0	172	407	566	615	615	563	446	212	0	0	0	0	0	0
			Diffuse	60	0	0	0	0	0	20	102	154	201	237	244	200	158	107	20	0	0	0	0	0
		SW	Beam	110	0	0	0	0	0	0	50	218	371	499	579	576	351	0	0	0	0	0	0	0
			Diffuse	51	0	0	0	0	0	20	49	73	124	178	215	204	186	145	20	0	0	0	0	0
		W	Beam	42	0	0	0	0	0	0	0	0	0	0	90	257	368	284	0	0	0	0	0	0
			Diffuse	36	0	0	0	0	0	20	49	68	89	104	112	132	141	127	20	0	0	0	0	0
		NW	Beam	2	0	0	0	0	0	0	0	0	0	0	0	0	51	0	0	0	0	0	0	0
			Diffuse	28	0	0	0	0	0	20	49	68	89	104	107	88	68	63	20	0	0	0	0	0
		Horiz.	Beam	74	0	0	0	0	0	1	67	191	288	324	324	287	210	83	1	0	0	0	0	0
Horiz.		Diffuse	43	0	0	0	0	0	33	92	108	131	157	163	131	104	87	33	0	0	0	0	0	
Horiz.		Global	117	0	0	0	0	0	34	159	299	419	481	487	418	314	171	34	0	0	0	0	0	
March	Normal to beam		520	0	0	0	0	353	586	693	751	795	824	803	754	668	531	0	0	0	0	0	0	
	N	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	40	0	0	0	0	23	51	77	98	113	122	123	114	98	76	50	25	1	0	0	0	
	NE	Beam	12	0	0	0	0	0	156	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	43	0	0	0	0	24	97	99	98	113	122	123	114	98	76	50	27	1	0	0	0	0
	E	Beam	67	0	0	0	0	0	326	465	422	288	104	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	53	0	0	0	0	25	146	176	169	149	118	123	114	98	76	50	29	1	0	0	0	0
	Sunrise: 0601 Sunset: 1814	SE	Beam	129	0	0	0	0	0	305	525	601	587	509	375	192	5	0	0	0	0	0	0	0
			Diffuse	62	0	0	0	0	24	140	190	206	207	194	167	128	81	76	50	26	1	0	0	0
		S	Beam	172	0	0	0	0	0	105	278	429	542	615	637	579	466	317	158	0	0	0	0	0
			Diffuse	69	0	0	0	0	23	83	133	171	198	214	216	200	170	131	84	25	1	0	0	0
		SW	Beam	142	0	0	0	0	0	0	5	180	362	527	626	654	599	459	0	0	0	0	0	0
			Diffuse	63	0	0	0	0	24	51	77	84	128	166	196	208	206	191	157	27	1	0	0	0
		W	Beam	79	0	0	0	0	0	0	0	0	0	0	107	307	459	530	491	0	0	0	0	0
			Diffuse	54	0	0	0	0	25	51	77	98	113	122	118	149	169	176	165	29	1	0	0	0
		NW	Beam	16	0	0	0	0	0	0	0	0	0	0	0	0	0	151	236	0	0	0	0	0
			Diffuse	44	0	0	0	0	24	51	77	98	113	122	123	114	98	97	103	26	1	0	0	0
		Horiz.	Beam	140	0	0	0	0	12	85	223	343	434	492	510	464	374	255	128	31	0	0	0	0
Horiz.		Diffuse	57	0	0	0	0	35	94	120	140	153	159	157	148	132	111	81	33	1	0	0	0	
Horiz.		Global	197	0	0	0	0	47	179	343	483	587	652	668	612	506	366	209	64	1	0	0	0	

Table 2.13(g) Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: London (London Weather Centre) (1996–2005) — *continued*

Month	Orientation	Daily mean irradiance (W·m ⁻²) and mean hourly irradiance (W·m ⁻²) for the 21st day of the given month																				
		Mean	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	
July Sunrise: 0406 Sunset: 2007	Normal to beam	442	0	0	0	207	408	582	677	745	788	754	802	788	572	673	227	133	159	0	0	
	N Beam	7	0	0	0	65	49	0	0	0	0	0	0	0	0	0	0	0	16	50	0	0
	N Diffuse	71	0	0	13	70	89	102	123	140	151	161	158	151	151	124	108	92	65	11	0	0
	NE Beam	49	0	0	0	182	303	330	246	108	0	0	0	0	0	0	0	0	0	0	0	0
	NE Diffuse	78	0	0	13	108	163	170	156	135	151	161	158	151	151	124	108	73	42	11	0	0
	E Beam	99	0	0	0	193	379	504	504	425	283	92	0	0	0	0	0	0	0	0	0	0
	E Diffuse	86	0	0	13	111	185	212	211	196	172	149	158	151	151	124	108	73	42	11	0	0
	SE Beam	114	0	0	0	90	233	382	466	493	457	338	221	57	0	0	0	0	0	0	0	0
	SE Diffuse	85	0	0	13	78	142	182	203	209	203	195	165	132	151	124	108	73	42	11	0	0
	S Beam	99	0	0	0	0	0	37	156	272	364	385	410	364	209	155	15	0	0	0	0	0
	S Diffuse	78	0	0	13	43	76	99	137	166	187	204	197	186	185	137	125	73	42	11	0	0
	SW Beam	92	0	0	0	0	0	0	0	0	0	57	207	359	458	379	464	149	76	70	0	0
	SW Diffuse	83	0	0	13	43	76	102	123	140	132	170	189	203	227	203	169	111	71	11	0	0
	W Beam	70	0	0	0	0	0	0	0	0	0	0	98	283	327	501	197	124	148	0	0	0
	W Diffuse	82	0	0	13	43	76	102	123	140	151	161	143	172	214	211	184	127	97	11	0	0
	NW Beam	29	0	0	0	0	0	0	0	0	0	0	0	0	83	244	129	99	140	0	0	0
	NW Diffuse	76	0	0	13	43	76	102	123	140	151	161	158	151	154	156	162	118	94	11	0	0
	Horiz. Beam	212	0	0	2	41	142	288	425	548	639	642	682	640	420	422	112	46	31	1	0	0
	Horiz. Diffuse	102	0	0	21	85	135	160	177	187	191	213	196	191	240	178	213	149	85	18	0	0
	Horiz. Global	313	0	0	22	126	277	448	603	735	831	854	878	831	660	601	325	196	116	19	0	0
August Sunrise: 0453 Sunset: 1913	Normal to beam	449	0	0	0	184	471	640	757	780	733	680	791	774	602	492	286	0	0	0	0	
	N Beam	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	
	N Diffuse	57	0	0	0	14	63	86	108	124	138	149	152	137	123	110	85	60	19	0	0	
	NE Beam	27	0	0	0	130	246	199	63	0	0	0	0	0	0	0	0	0	0	0	0	
	NE Diffuse	62	0	0	0	14	103	149	138	113	138	149	152	137	123	110	85	54	20	0	0	
	E Beam	81	0	0	0	0	179	425	496	451	292	94	0	0	0	0	0	0	0	0	0	
	E Diffuse	71	0	0	0	14	119	198	205	187	165	141	152	137	123	110	85	54	20	0	0	
	SE Beam	118	0	0	0	122	355	503	575	525	393	242	114	0	0	0	0	0	0	0	0	
	SE Diffuse	76	0	0	0	14	101	179	207	210	207	200	180	131	123	110	85	54	20	0	0	
	S Beam	129	0	0	0	0	77	215	362	451	462	429	457	370	203	81	0	0	0	0	0	
	S Diffuse	74	0	0	0	14	53	102	141	170	194	214	220	192	168	144	101	54	19	0	0	
	SW Beam	121	0	0	0	0	0	0	0	0	112	260	365	533	588	474	372	191	0	0	0	
	SW Diffuse	77	0	0	0	14	53	86	108	124	132	174	206	206	208	209	180	118	20	0	0	
	W Beam	85	0	0	0	0	0	0	0	0	0	87	296	461	468	445	278	0	0	0	0	
	W Diffuse	72	0	0	0	14	53	86	108	124	138	149	147	163	185	207	199	146	20	0	0	
	NW Beam	30	0	0	0	0	0	0	0	0	0	0	0	0	64	187	257	202	0	0	0	
	NW Diffuse	63	0	0	0	14	53	86	108	124	138	149	152	137	111	140	149	122	20	0	0	
	Horiz. Beam	182	0	0	0	1	45	186	341	489	565	561	521	573	499	321	194	69	4	0	0	
	Horiz. Diffuse	83	0	0	0	24	106	147	162	164	178	203	220	174	160	170	143	103	31	0	0	
	Horiz. Global	265	0	0	0	25	151	333	504	654	743	764	741	747	659	491	337	172	35	0	0	
September Sunrise: 0542 Sunset: 1804	Normal to beam	463	0	0	0	0	608	631	700	708	704	700	680	652	591	504	0	0	0	0		
	N Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	N Diffuse	41	0	0	0	5	23	49	77	98	113	122	122	114	99	77	50	24	4	0	0	
	NE Beam	17	0	0	0	0	0	271	144	0	0	0	0	0	0	0	0	0	0	0		
	NE Diffuse	44	0	0	0	5	26	104	98	98	113	122	122	114	99	77	50	28	4	0	0	
	E Beam	77	0	0	0	0	0	562	500	426	271	92	0	0	0	0	0	0	0	0		
	E Diffuse	55	0	0	0	5	31	168	175	168	149	120	122	114	99	77	50	30	4	0	0	
	SE Beam	132	0	0	0	0	0	523	563	605	551	448	317	161	3	0	0	0	0	0		
	SE Diffuse	63	0	0	0	5	28	160	189	204	205	192	166	130	85	77	50	27	4	0		
	S Beam	159	0	0	0	0	178	83	430	508	542	539	488	401	278	148	0	0	0	0		
	S Diffuse	68	0	0	0	5	23	83	131	169	196	211	211	197	170	131	84	24	4	0		
	SW Beam	125	0	0	0	0	0	0	0	3	167	318	446	529	565	529	434	0	0	0		
	SW Diffuse	63	0	0	0	5	26	49	77	83	128	166	192	205	204	188	155	28	4	0		
	W Beam	70	0	0	0	0	0	0	0	0	0	91	260	397	469	466	0	0	0	0		
	W Diffuse	54	0	0	0	5	31	49	77	98	113	122	121	150	169	175	163	30	4	0		
	NW Beam	15	0	0	0	0	0	0	0	0	0	0	0	0	0	135	225	0	0	0		
	NW Diffuse	44	0	0	0	5	28	49	77	98	113	122	122	114	99	99	102	27	4	0		
	Horiz. Beam	134	0	0	0	0	65	150	244	351	413	440	437	396	327	228	124	46	0	0		
	Horiz. Diffuse	58	0	0	0	8	24	75	114	137	158	170	171	163	144	119	83	29	6	0		
	Horiz. Global	193	0	0	0	8	90	225	359	489	571	610	608	559	471	347	206	75	6	0		

Table 2.13(g) Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: London (London Weather Centre) (1996–2005) — *continued*

Month	Orientation		Daily mean irradiance ($\text{W}\cdot\text{m}^{-2}$) and mean hourly irradiance ($\text{W}\cdot\text{m}^{-2}$) for the 21st day of the given month																					
			Mean	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030		
October	Normal to beam		474	0	0	0	0	0	0	567	625	635	697	709	733	668	583	0	0	0	0	0		
	N	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	27	0	0	0	0	2	27	47	69	85	92	92	83	68	46	26	1	0	0	0	0	
	NE	Beam	3	0	0	0	0	0	0	79	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	27	0	0	0	0	2	27	61	69	85	92	92	83	68	46	30	1	0	0	0	0	
	E	Beam	48	0	0	0	0	0	0	442	374	239	89	0	0	0	0	0	0	0	0	0	0	
		Diffuse	36	0	0	0	0	2	31	146	143	126	96	92	83	68	46	30	1	0	0	0	0	
	Sunrise: 0631 Sunset: 1658	SE	Beam	118	0	0	0	0	0	0	546	585	539	496	376	233	60	0	0	0	0	0	0	
			Diffuse	49	0	0	0	0	2	31	171	189	192	179	153	115	71	46	26	1	0	0	0	0
		S	Beam	166	0	0	0	0	0	0	331	453	524	612	623	605	485	341	0	0	0	0	0	0
			Diffuse	58	0	0	0	0	2	27	120	160	188	203	203	188	160	120	26	1	0	0	0	0
		SW	Beam	123	0	0	0	0	0	0	0	56	202	369	505	623	625	562	0	0	0	0	0	0
			Diffuse	49	0	0	0	0	2	27	47	73	118	153	179	192	190	171	30	1	0	0	0	0
		W	Beam	51	0	0	0	0	0	0	0	0	0	0	0	91	275	400	455	0	0	0	0	0
			Diffuse	36	0	0	0	0	2	31	47	69	85	92	95	123	142	147	30	1	0	0	0	0
		NW	Beam	3	0	0	0	0	0	0	0	0	0	0	0	0	0	81	0	0	0	0	0	0
Diffuse			27	0	0	0	0	2	31	47	69	85	92	92	83	68	60	26	1	0	0	0	0	
	Horiz.	Beam	83	0	0	0	0	1	39	130	213	267	322	327	308	227	132	32	0	0	0	0	0	
		Diffuse	39	0	0	0	0	3	33	74	104	127	131	129	115	99	73	35	2	0	0	0	0	
	Horiz.	Global	122	0	0	0	0	4	73	204	317	394	452	456	422	326	205	67	2	0	0	0	0	
November	Normal to beam		359	0	0	0	0	0	0	469	629	679	666	630	513	0	0	0	0	0	0	0	0	
	N	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	16	0	0	0	0	0	3	27	40	55	65	64	55	40	27	1	0	0	0	0	0	
	NE	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	16	0	0	0	0	0	3	26	40	55	65	64	55	40	29	1	0	0	0	0	0	
	E	Beam	24	0	0	0	0	0	0	0	268	226	83	0	0	0	0	0	0	0	0	0	0	
		Diffuse	21	0	0	0	0	0	3	27	105	97	74	64	55	40	27	1	0	0	0	0	0	
	Sunrise: 0726 Sunset: 1605	SE	Beam	93	0	0	0	0	0	0	454	557	511	386	238	82	0	0	0	0	0	0	0	
			Diffuse	35	0	0	0	0	0	3	28	151	169	168	139	100	56	25	1	0	0	0	0	0
		S	Beam	132	0	0	0	0	0	0	374	561	640	628	563	409	0	0	0	0	0	0	0	0
			Diffuse	44	0	0	0	0	0	3	27	131	170	196	192	170	134	27	1	0	0	0	0	0
		SW	Beam	94	0	0	0	0	0	0	74	237	394	502	558	497	0	0	0	0	0	0	0	0
			Diffuse	35	0	0	0	0	0	3	26	57	100	142	164	169	155	29	1	0	0	0	0	0
		W	Beam	25	0	0	0	0	0	0	0	0	0	82	227	293	0	0	0	0	0	0	0	0
			Diffuse	21	0	0	0	0	0	3	27	40	55	65	73	97	107	27	1	0	0	0	0	0
		NW	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diffuse			16	0	0	0	0	0	3	28	40	55	65	64	55	40	25	1	0	0	0	0	0	
	Horiz.	Beam	42	0	0	0	0	0	0	18	92	171	211	207	171	100	27	0	0	0	0	0	0	
		Diffuse	24	0	0	0	0	0	5	38	68	83	96	95	83	65	35	1	0	0	0	0	0	
	Horiz.	Global	65	0	0	0	0	0	5	56	160	254	307	302	254	165	62	1	0	0	0	0	0	
December	Normal to beam		399	0	0	0	0	0	0	479	576	599	599	557	383	0	0	0	0	0	0	0	0	
	N	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	12	0	0	0	0	0	0	14	29	44	52	52	44	30	14	0	0	0	0	0	0	
	NE	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	12	0	0	0	0	0	0	14	29	44	52	52	44	30	14	0	0	0	0	0	0	
	E	Beam	23	0	0	0	0	0	0	0	267	202	72	0	0	0	0	0	0	0	0	0	0	
		Diffuse	16	0	0	0	0	0	0	14	94	85	62	52	44	30	14	0	0	0	0	0	0	
	Sunrise: 0801 Sunset: 1555	SE	Beam	87	0	0	0	0	0	0	466	514	457	355	220	70	0	0	0	0	0	0	0	0
			Diffuse	31	0	0	0	0	0	0	14	143	155	147	125	90	49	14	0	0	0	0	0	0
		S	Beam	120	0	0	0	0	0	0	391	525	574	574	507	313	0	0	0	0	0	0	0	0
			Diffuse	39	0	0	0	0	0	0	14	124	158	173	156	115	14	0	0	0	0	0	0	0
		SW	Beam	83	0	0	0	0	0	0	0	88	228	355	457	497	372	0	0	0	0	0	0	0
			Diffuse	30	0	0	0	0	0	0	14	49	91	125	147	154	131	14	0	0	0	0	0	0
		W	Beam	20	0	0	0	0	0	0	0	0	0	72	195	214	0	0	0	0	0	0	0	0
			Diffuse	16	0	0	0	0	0	0	14	29	44	52	62	85	88	14	0	0	0	0	0	0
		NW	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diffuse			12	0	0	0	0	0	0	14	29	44	52	52	44	30	14	0	0	0	0	0	0	
	Horiz.	Beam	28	0	0	0	0	0	0	5	68	124	152	152	120	54	5	0	0	0	0	0	0	
		Diffuse	18	0	0	0	0	0	0	21	49	69	79	79	70	54	21	0	0	0	0	0	0	
	Horiz.	Global	47	0	0	0	0	0	26	117	193	232	232	190	108	26	0	0	0	0	0	0	0	