

**Table 2.13(k)** Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: Nottingham (Watnall) (2002–2011)

Month	Orientation		Daily mean irradiance (W·m <sup>-2</sup> ) and mean hourly irradiance (W·m <sup>-2</sup> ) 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 Sunrise: 0802 Sunset: 1630	Normal to beam		377	0	0	0	0	0	0	0	0	314	523	603	647	669	637	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	14	0	0	0	0	0	0	0	10	33	49	59	61	56	42	33	4	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	15	0	0	0	0	0	0	0	10	33	49	59	61	56	42	37	5	0	0	0	0
	E	Beam	22	0	0	0	0	0	0	0	196	220	114	0	0	0	0	0	0	0	0	0	0
		Diffuse	20	0	0	0	0	0	0	0	10	93	99	78	61	56	42	33	5	0	0	0	0
	SE	Beam	88	0	0	0	0	0	0	0	309	480	481	411	293	141	0	0	0	0	0	0	0
		Diffuse	34	0	0	0	0	0	0	0	10	126	163	163	145	114	68	29	4	0	0	0	0
	S	Beam	126	0	0	0	0	0	0	0	241	458	567	617	614	530	0	0	0	0	0	0	0
		Diffuse	43	0	0	0	0	0	0	0	10	106	158	182	192	185	156	33	4	0	0	0	0
	SW	Beam	90	0	0	0	0	0	0	0	32	169	321	462	575	608	0	0	0	0	0	0	0
		Diffuse	34	0	0	0	0	0	0	0	10	44	87	126	157	177	173	37	5	0	0	0	0
	W	Beam	24	0	0	0	0	0	0	0	0	0	0	0	36	199	330	0	0	0	0	0	0
		Diffuse	19	0	0	0	0	0	0	0	10	33	49	59	61	92	111	33	5	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	14	0	0	0	0	0	0	0	10	33	49	59	61	56	42	29	4	0	0	0	0
Horiz.	Beam	38	0	0	0	0	0	0	1	47	122	170	189	177	128	62	6	0	0	0	0	0	
	Diffuse	22	0	0	0	0	0	0	16	62	81	91	93	84	64	34	5	0	0	0	0	0	
	Global	60	0	0	0	0	0	0	17	110	203	261	282	261	191	96	12	0	0	0	0	0	
February Sunrise: 0709 Sunset: 1728	Normal to beam		455	0	0	0	0	0	93	464	651	715	720	720	706	614	324	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	0	3	36	61	78	97	106	99	77	51	27	3	0	0	0	0
	NE	Beam	1	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	27	0	0	0	0	0	3	51	61	78	97	106	99	77	51	27	3	0	0	0	0
	E	Beam	34	0	0	0	0	0	77	306	292	148	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	34	0	0	0	0	0	3	69	137	133	116	106	99	77	51	27	3	0	0	0	0
	SE	Beam	104	0	0	0	0	0	90	444	579	549	431	284	119	0	0	0	0	0	0	0	0
		Diffuse	49	0	0	0	0	0	3	73	173	197	213	200	155	92	51	27	3	0	0	0	0
	S	Beam	162	0	0	0	0	0	50	322	527	628	645	618	544	391	152	0	0	0	0	0	0
		Diffuse	63	0	0	0	0	0	3	60	141	186	233	256	242	191	134	72	3	0	0	0	0
	SW	Beam	131	0	0	0	0	0	0	11	166	340	480	590	651	593	307	0	0	0	0	0	0
		Diffuse	56	0	0	0	0	0	3	36	61	105	163	213	235	216	180	117	3	0	0	0	0
	W	Beam	57	0	0	0	0	0	0	0	0	0	0	0	35	217	376	447	283	0	0	0	0
		Diffuse	38	0	0	0	0	0	3	36	61	78	97	96	138	152	147	110	3	0	0	0	0
	NW	Beam	6	0	0	0	0	0	0	0	0	0	0	0	0	0	39	93	0	0	0	0	0
		Diffuse	28	0	0	0	0	0	3	36	61	78	97	106	99	77	54	55	3	0	0	0	0
Horiz.	Beam	73	0	0	0	0	0	1	16	134	246	307	319	299	247	153	40	0	0	0	0	0	
	Diffuse	42	0	0	0	0	0	5	76	104	118	145	162	151	114	79	50	5	0	0	0	0	
	Global	115	0	0	0	0	0	6	92	238	364	453	481	450	361	232	90	5	0	0	0	0	
March Sunrise: 0603 Sunset: 1820	Normal to beam		510	0	0	0	0	27	346	552	828	960	1035	881	721	820	466	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	37	0	0	0	0	0	38	77	98	102	104	103	104	98	74	58	26	0	0	0	0
	NE	Beam	5	0	0	0	0	0	13	92	18	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	38	0	0	0	0	0	38	108	93	102	104	103	104	98	74	58	26	0	0	0	0
	E	Beam	50	0	0	0	0	0	26	285	359	357	176	0	0	0	0	0	0	0	0	0	0
		Diffuse	46	0	0	0	0	0	38	166	178	141	105	103	104	98	74	58	26	0	0	0	0
	SE	Beam	124	0	0	0	0	0	23	311	490	673	655	524	260	46	0	0	0	0	0	0	0
		Diffuse	54	0	0	0	0	0	38	174	211	193	166	139	121	91	74	58	26	0	0	0	0
	S	Beam	182	0	0	0	0	0	7	155	334	594	751	821	660	472	422	159	0	0	0	0	0
		Diffuse	62	0	0	0	0	0	38	127	172	180	178	171	181	175	130	99	26	0	0	0	0
	SW	Beam	152	0	0	0	0	0	0	0	168	407	637	674	622	739	409	0	0	0	0	0	0
		Diffuse	57	0	0	0	0	0	38	77	98	110	134	151	183	205	183	167	26	0	0	0	0
	W	Beam	76	0	0	0	0	0	0	0	0	0	0	80	293	408	623	420	0	0	0	0	0
		Diffuse	48	0	0	0	0	0	38	77	98	102	104	91	126	163	164	170	26	0	0	0	0
	NW	Beam	14	0	0	0	0	0	0	0	0	0	0	0	0	0	142	185	0	0	0	0	0
		Diffuse	39	0	0	0	0	0	38	77	98	102	104	103	104	98	84	106	26	0	0	0	0
Horiz.	Beam	139	0	0	0	0	0	6	119	254	453	572	625	504	361	325	123	3	0	0	0	0	
	Diffuse	49	0	0	0	0	0	75	144	158	124	103	89	117	136	91	100	43	0	0	0	0	
	Global	188	0	0	0	0	0	80	262	413	576	675	715	621	497	416	223	46	0	0	0	0	

Table continues

**Table 2.13(k)** Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: Nottingham (Watnall) (2002–2011)  
— 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	
April	Normal to beam		487	0	0	0	0	13	264	426	140	990	1030	794	860	963	931	298	1082	0	0	0	
	N	Beam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	
		Diffuse	51	0	0	0	6	37	84	112	134	119	125	138	127	109	92	89	35	22	7	0	
	NE	Beam	12	0	0	0	0	9	139	134	12	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	57	0	0	0	6	37	136	146	163	119	125	138	127	109	92	89	42	24	7	0	
	E	Beam	50	0	0	0	0	13	240	335	85	385	148	0	0	0	0	0	0	0	0	0	
		Diffuse	62	0	0	0	6	37	168	203	187	139	115	138	127	109	92	89	42	28	7	0	
	SE	Beam	99	0	0	0	0	9	201	340	109	688	578	304	148	0	0	0	0	0	0	0	
		Diffuse	66	0	0	0	6	37	156	205	194	173	160	164	124	109	92	89	42	27	7	0	
	Sunrise: 0451 Sunset: 1916	S	Beam	143	0	0	0	0	0	43	146	68	588	669	518	519	486	337	56	0	0	0	0
			Diffuse	68	0	0	0	6	37	106	150	181	162	170	201	180	145	117	112	42	22	7	0
		SW	Beam	165	0	0	0	0	0	0	0	0	143	369	429	586	740	743	228	733	0	0	0
			Diffuse	68	0	0	0	6	37	84	112	134	111	139	185	190	176	169	165	104	24	7	0
		W	Beam	124	0	0	0	0	0	0	0	0	0	0	89	309	562	713	267	1047	0	0	0
			Diffuse	65	0	0	0	6	37	84	112	134	119	125	127	148	154	165	178	134	28	7	0
		NW	Beam	51	0	0	0	0	0	0	0	0	0	0	0	54	266	150	748	0	0	0	0
			Diffuse	57	0	0	0	6	37	84	112	134	119	125	138	127	93	108	141	105	27	7	0
	Horiz.	Beam	196	0	0	0	1	3	100	219	87	697	768	594	612	614	494	119	272	115	0	0	
		Diffuse	70	0	1	2	10	72	163	197	275	108	106	173	144	104	93	169	32	13	12	0	
		Global	265	0	1	2	10	75	263	415	362	805	874	767	757	718	587	287	304	128	12	0	
May	Normal to beam		483	0	0	0	135	319	492	602	694	738	765	776	806	809	770	747	462	572	0	0	
	N	Beam	12	0	0	0	42	37	0	0	0	0	0	0	0	0	0	0	49	172	0	0	
		Diffuse	72	0	0	13	67	95	108	129	144	154	159	158	148	135	118	96	89	83	21	0	
	NE	Beam	39	0	0	0	118	236	276	215	95	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	78	0	0	13	94	161	178	165	140	154	159	158	148	135	118	96	79	44	20	0	
	E	Beam	86	0	0	0	126	297	428	451	400	269	99	0	0	0	0	0	0	0	0	0	
		Diffuse	86	0	0	13	96	181	220	223	205	179	148	158	148	135	118	96	79	44	23	0	
	SE	Beam	107	0	0	0	59	184	328	423	471	442	359	230	76	0	0	0	0	0	0	0	
		Diffuse	86	0	0	13	73	144	192	216	220	214	196	170	132	135	118	96	79	44	24	0	
	Sunrise: 0355 Sunset: 2007	S	Beam	108	0	0	0	0	0	37	147	266	356	409	416	392	315	194	62	0	0	0	0
			Diffuse	79	0	0	13	44	80	110	148	176	197	206	204	187	162	132	90	79	44	21	0
		SW	Beam	134	0	0	0	0	0	0	0	61	219	358	478	547	540	500	269	255	0	0	0
			Diffuse	86	0	0	13	44	80	108	129	144	138	170	194	202	202	196	175	153	104	20	0
		W	Beam	125	0	0	0	0	0	0	0	0	0	90	284	458	570	646	429	533	0	0	0
			Diffuse	89	0	0	13	44	80	108	129	144	154	159	144	168	186	202	203	199	175	23	0
		NW	Beam	67	0	0	0	0	0	0	0	0	0	0	0	101	266	413	338	498	0	0	0
			Diffuse	80	0	0	13	44	80	108	129	144	154	159	158	148	125	145	158	173	166	24	0
	Horiz.	Beam	230	0	0	1	27	110	240	371	501	588	639	649	644	588	480	371	164	118	21	0	
		Diffuse	98	0	1	21	91	151	183	202	205	209	209	205	184	166	154	128	137	70	28	3	
		Global	327	0	1	22	118	261	423	573	706	797	848	854	828	754	634	499	301	189	49	3	
June	Normal to beam		477	0	0	0	161	412	489	635	721	737	748	806	816	789	746	666	603	252	11	0	
	N	Beam	12	0	0	0	57	68	0	0	0	0	0	0	0	0	0	0	73	79	5	0	
		Diffuse	75	0	1	22	80	103	112	130	144	157	164	159	152	142	127	109	91	93	20	5	
	NE	Beam	47	0	0	0	144	314	290	249	128	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	83	0	1	23	110	177	185	169	144	157	164	159	152	142	127	109	84	60	20	5	
	E	Beam	92	0	0	0	146	376	420	473	418	277	110	0	0	0	0	0	0	0	0	0	
		Diffuse	91	0	1	22	111	196	222	221	203	183	155	159	152	142	127	109	84	60	20	5	
	SE	Beam	105	0	0	0	62	218	304	419	463	420	334	227	69	0	0	0	0	0	0	0	
		Diffuse	88	0	1	22	82	148	189	209	212	211	198	166	133	142	127	109	84	60	20	5	
	Sunrise: 0335 Sunset: 2038	S	Beam	96	0	0	0	0	0	10	120	237	316	362	395	364	280	167	41	0	0	0	0
			Diffuse	80	0	1	22	52	84	107	139	166	191	203	195	182	164	136	101	84	60	20	5
		SW	Beam	118	0	0	0	0	0	0	0	0	27	178	332	445	497	493	423	334	107	3	0
			Diffuse	87	0	1	23	52	84	112	130	144	134	168	184	196	202	198	185	154	102	20	5
		W	Beam	110	0	0	0	0	0	0	0	0	0	75	266	423	531	557	546	230	9	0	0
			Diffuse	90	0	1	22	52	84	112	130	144	157	164	140	166	189	205	215	206	144	20	5
		NW	Beam	58	0	0	0	0	0	0	0	0	0	0	0	101	257	365	438	219	10	0	0
			Diffuse	83	0	1	22	52	84	112	130	144	157	164	159	152	132	153	172	180	140	20	5
	Horiz.	Beam	242	0	1	3	37	154	251	407	538	605	645	699	680	604	498	362	245	66	1	1	
		Diffuse	104	0	1	36	105	150	191	197	198	213	219	195	184	179	169	159	131	118	40	7	
		Global	345	0	2	39	142	304	442	604	736	818	864	894	864	783	667	522	376	184	41	9	

Table continues

**Table 2.13(k)** Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: Nottingham (Watnall) (2002–2011)  
— 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	
July	Normal to beam		445	0	0	0	123	304	436	534	601	668	722	753	747	726	655	553	422	323	0	0	
	N	Beam	9	0	0	0	42	46	0	0	0	0	0	0	0	0	0	0	32	87	0	0	
		Diffuse	74	0	0	9	62	94	105	129	147	158	162	160	155	144	130	111	92	84	27	0	
	NE	Beam	38	0	0	0	110	233	259	210	105	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	81	0	0	9	85	156	178	172	154	158	162	160	155	144	130	111	85	53	26	0	
	E	Beam	81	0	0	0	113	284	385	411	365	268	121	0	0	0	0	0	0	0	0	0	
		Diffuse	89	0	0	9	86	173	215	226	217	192	157	160	155	144	130	111	85	53	28	0	
	SE	Beam	100	0	0	0	50	169	285	372	411	409	354	245	95	0	0	0	0	0	0	0	
		Diffuse	89	0	0	9	64	135	185	216	228	223	204	177	144	144	130	111	85	53	28	0	
	Sunrise: 0402 Sunset: 2020	S	Beam	98	0	0	0	0	18	115	216	311	380	404	370	295	180	61	0	0	0	0	
			Diffuse	82	0	0	9	39	75	106	147	181	201	209	207	197	177	150	115	85	53	27	0
		SW	Beam	112	0	0	0	0	0	0	0	31	182	326	428	482	458	375	253	152	0	0	
			Diffuse	89	0	0	9	39	75	105	129	147	140	170	192	208	214	213	196	159	105	26	0
		W	Beam	96	0	0	0	0	0	0	0	0	0	57	235	387	468	469	389	302	0	0	
			Diffuse	90	0	0	9	39	75	105	129	147	158	162	141	171	195	215	221	200	154	28	0
		NW	Beam	47	0	0	0	0	0	0	0	0	0	0	0	65	204	288	298	275	0	0	
			Diffuse	81	0	0	9	39	75	105	129	147	158	162	160	155	131	156	174	172	145	28	0
		Horiz.	Beam	206	0	0	1	22	99	205	320	426	526	601	633	605	539	422	288	160	75	12	0
Horiz.		Diffuse	108	0	1	15	81	142	185	212	229	231	223	212	206	197	192	179	151	101	41	5	
Horiz.		Global	314	0	1	16	103	241	389	532	655	757	824	845	811	736	614	467	312	176	53	5	
August	Normal to beam		387	0	0	0	0	368	383	525	571	594	632	674	675	516	403	553	298	0	0		
	N	Beam	1	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	61	0	0	0	21	58	86	111	133	149	155	152	145	142	124	89	62	34	13	0	
	NE	Beam	30	0	0	0	0	267	209	175	60	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	69	0	0	0	25	137	151	149	133	149	155	152	145	142	124	89	62	36	13	0	
	E	Beam	76	0	0	0	0	358	351	418	355	241	102	0	0	0	0	0	0	0	0	0	
		Diffuse	80	0	0	0	26	166	196	215	209	190	157	152	145	142	124	89	62	41	13	0	
	SE	Beam	106	0	0	0	0	239	288	417	443	416	360	266	126	0	0	0	0	0	0	0	
		Diffuse	84	0	0	0	22	128	176	214	231	233	218	187	150	142	124	89	62	39	13	0	
	Sunrise: 0452 Sunset: 1924	S	Beam	109	0	0	0	0	56	171	271	347	406	439	408	263	150	110	1	0	0	0	
			Diffuse	83	0	0	0	21	52	103	148	187	216	229	225	212	202	168	108	66	34	13	0
		SW	Beam	102	0	0	0	0	0	0	0	74	215	354	452	393	321	425	204	0	0	0	0
			Diffuse	83	0	0	0	25	52	86	111	133	148	184	207	222	238	220	191	133	36	13	0
		W	Beam	70	0	0	0	0	0	0	0	0	0	63	230	293	304	492	287	0	0	0	0
			Diffuse	78	0	0	0	26	52	86	111	133	149	155	142	173	210	215	208	161	41	13	0
		NW	Beam	25	0	0	0	0	0	0	0	0	0	0	0	0	21	109	270	202	0	0	0
			Diffuse	68	0	0	0	22	52	86	111	133	149	155	152	145	135	155	150	133	39	13	0
		Horiz.	Beam	153	0	0	0	42	83	143	268	355	418	473	508	485	334	219	228	79	48	0	0
Horiz.		Diffuse	99	0	0	4	24	95	157	185	214	234	236	223	212	237	223	145	118	45	22	0	
Horiz.		Global	252	0	0	4	66	178	300	453	568	652	709	731	698	571	442	372	197	92	22	0	
September	Normal to beam		422	0	0	0	0	0	30	335	499	834	584	371	763	520	985	991	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	
		Diffuse	42	0	0	0	0	19	42	85	105	104	125	134	107	102	63	40	68	2	0	0	
	NE	Beam	4	0	0	0	0	0	13	72	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	43	0	0	0	0	19	58	110	105	104	125	134	107	102	63	40	68	2	0	0	
	E	Beam	41	0	0	0	0	0	28	264	301	313	72	0	0	0	0	0	0	0	0	0	
		Diffuse	50	0	0	0	0	19	62	169	177	133	128	134	107	102	63	40	68	2	0	0	
	SE	Beam	89	0	0	0	0	0	26	301	434	653	374	169	182	3	0	0	0	0	0	0	
		Diffuse	60	0	0	0	0	19	61	180	212	188	200	186	120	95	63	40	68	2	0	0	
	Sunrise: 0545 Sunset: 1811	S	Beam	145	0	0	0	0	9	162	314	610	458	290	556	324	467	290	0	0	0	0	
			Diffuse	68	0	0	0	0	19	57	137	180	181	220	222	188	177	105	65	68	2	0	0
		SW	Beam	147	0	0	0	0	0	0	0	9	210	273	242	603	455	886	854	0	0	0	0
			Diffuse	63	0	0	0	0	19	42	85	100	117	176	208	197	211	154	130	68	2	0	0
		W	Beam	99	0	0	0	0	0	0	0	0	0	51	298	320	787	918	0	0	0	0	
			Diffuse	54	0	0	0	0	19	42	85	105	104	125	151	141	176	142	138	68	2	0	0
		NW	Beam	28	0	0	0	0	0	0	0	0	0	0	0	0	226	444	0	0	0	0	
			Diffuse	44	0	0	0	0	19	42	85	105	104	125	134	107	102	77	83	68	2	0	0
		Horiz.	Beam	113	0	0	0	2	7	127	245	474	355	225	430	252	366	233	0	0	0	0	
Horiz.		Diffuse	65	0	0	1	4	31	91	158	176	123	197	245	139	169	59	37	113	20	0	0	
Horiz.		Global	178	0	0	1	4	33	98	286	421	597	551	470	570	421	425	269	113	20	0	0	

Table continues

**Table 2.13(k)** Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: Nottingham (Watnall) (2002–2011)  
— 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 Sunrise: 0638 Sunset: 1700	Normal to beam		394	0	0	0	0	0	0	439	584	673	745	754	710	577	249	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	25	0	0	0	0	0	30	51	71	82	86	84	77	64	43	16	0	0	0	0	0
	NE	Beam	2	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	26	0	0	0	0	0	30	62	71	82	86	84	77	64	43	17	0	0	0	0	0
	E	Beam	39	0	0	0	0	0	0	330	329	225	63	0	0	0	0	0	0	0	0	0	0
		Diffuse	33	0	0	0	0	0	32	143	142	118	83	84	77	64	43	17	0	0	0	0	0
	SE	Beam	111	0	0	0	0	0	0	425	544	564	516	380	204	33	0	0	0	0	0	0	0
		Diffuse	47	0	0	0	0	0	32	170	194	190	170	141	106	65	43	16	0	0	0	0	0
	S	Beam	156	0	0	0	0	0	0	271	441	572	666	668	585	412	140	0	0	0	0	0	0
		Diffuse	57	0	0	0	0	0	30	126	169	192	198	195	182	157	92	16	0	0	0	0	0
	SW	Beam	114	0	0	0	0	0	0	80	245	427	564	623	549	241	0	0	0	0	0	0	0
		Diffuse	47	0	0	0	0	0	30	51	82	122	153	176	190	190	124	17	0	0	0	0	0
	W	Beam	41	0	0	0	0	0	0	0	0	0	0	0	130	296	365	200	0	0	0	0	0
		Diffuse	34	0	0	0	0	0	32	51	71	82	86	94	124	146	112	17	0	0	0	0	0
	NW	Beam	2	0	0	0	0	0	0	0	0	0	0	0	0	0	43	0	0	0	0	0	0
		Diffuse	26	0	0	0	0	0	32	51	71	82	86	84	77	64	61	16	0	0	0	0	0
Horiz.	Beam	73	0	0	0	0	0	14	102	196	274	328	326	274	175	47	11	0	0	0	0	0	
	Diffuse	38	0	0	0	0	0	46	91	112	120	116	113	108	102	84	23	0	0	0	0	0	
	Global	111	0	0	0	0	0	60	193	308	394	444	439	382	276	130	34	0	0	0	0	0	
November Sunrise: 0736 Sunset: 1605	Normal to beam		353	0	0	0	0	0	0	481	573	560	698	620	596	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	14	0	0	0	0	0	3	27	40	53	60	61	50	33	20	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	15	0	0	0	0	0	3	26	40	53	60	61	50	33	24	0	0	0	0	0	0
	E	Beam	21	0	0	0	0	0	0	0	261	186	48	0	0	0	0	0	0	0	0	0	0
		Diffuse	19	0	0	0	0	0	3	27	104	92	66	61	50	33	21	0	0	0	0	0	0
	SE	Beam	86	0	0	0	0	0	0	0	463	501	411	388	217	77	0	0	0	0	0	0	0
		Diffuse	33	0	0	0	0	0	3	29	155	165	152	140	93	47	18	0	0	0	0	0	0
	S	Beam	130	0	0	0	0	0	0	0	394	522	534	660	550	467	0	0	0	0	0	0	0
		Diffuse	44	0	0	0	0	0	3	27	138	170	181	202	168	137	20	0	0	0	0	0	0
	SW	Beam	99	0	0	0	0	0	0	0	94	237	343	545	561	583	0	0	0	0	0	0	0
		Diffuse	36	0	0	0	0	0	3	26	62	103	136	176	171	164	24	0	0	0	0	0	0
	W	Beam	30	0	0	0	0	0	0	0	0	0	0	111	244	358	0	0	0	0	0	0	0
		Diffuse	20	0	0	0	0	0	3	27	40	53	60	77	99	112	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	14	0	0	0	0	0	3	29	40	53	60	61	50	33	18	0	0	0	0	0	0
Horiz.	Beam	37	0	0	0	0	0	0	17	90	147	162	198	148	96	37	0	0	0	0	0	0	
	Diffuse	22	0	0	0	0	0	4	39	67	84	96	91	76	52	20	3	0	0	0	0	0	
	Global	59	0	0	0	0	0	4	56	157	231	258	288	224	147	57	3	0	0	0	0	0	
December Sunrise: 0812 Sunset: 1552	Normal to beam		369	0	0	0	0	0	0	0	159	728	725	711	626	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	11	0	0	0	0	0	0	4	34	42	54	58	43	26	10	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	11	0	0	0	0	0	0	4	33	42	54	58	43	26	11	0	0	0	0	0	0
	E	Beam	6	0	0	0	0	0	0	0	0	58	96	0	0	0	0	0	0	0	0	0	0
		Diffuse	13	0	0	0	0	0	0	4	33	67	69	58	43	26	10	0	0	0	0	0	0
	SE	Beam	65	0	0	0	0	0	0	0	0	143	564	440	292	123	0	0	0	0	0	0	0
		Diffuse	27	0	0	0	0	0	0	4	35	95	188	171	104	51	9	0	0	0	0	0	0
	S	Beam	113	0	0	0	0	0	0	0	0	145	702	701	654	518	0	0	0	0	0	0	0
		Diffuse	39	0	0	0	0	0	0	4	34	95	223	244	188	140	10	0	0	0	0	0	0
	SW	Beam	95	0	0	0	0	0	0	0	0	62	429	551	633	609	0	0	0	0	0	0	0
		Diffuse	34	0	0	0	0	0	0	4	33	69	153	202	183	161	11	0	0	0	0	0	0
	W	Beam	28	0	0	0	0	0	0	0	0	0	0	78	242	344	0	0	0	0	0	0	0
		Diffuse	17	0	0	0	0	0	0	4	33	42	54	70	92	101	10	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	11	0	0	0	0	0	0	4	35	42	54	58	43	26	9	0	0	0	0	0	0
Horiz.	Beam	25	0	0	0	0	0	0	0	11	30	166	167	139	78	19	0	0	0	0	0	0	
	Diffuse	18	0	0	0	0	0	0	7	52	85	82	91	64	40	10	0	0	0	0	0	0	
	Global	43	0	0	0	0	0	0	7	63	115	248	258	203	118	29	0	0	0	0	0	0	