

**Table 2.13(h)** Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: Manchester (Hulme Library) (2002–2011)

Month	Orientation		Daily mean irradiance ( $W \cdot m^{-2}$ ) and mean hourly irradiance ( $W \cdot m^{-2}$ ) 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 Sunrise: 0808 Sunset: 1632	Normal to beam		321	0	0	0	0	0	0	0	0	368	474	505	517	516	506	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	0	0	12	31	52	65	70	64	48	38	6	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	0	0	11	31	52	65	70	64	48	42	7	0	0	0	0
	E	Beam	23	0	0	0	0	0	0	0	235	206	104	0	0	0	0	0	0	0	0	0	0
		Diffuse	22	0	0	0	0	0	0	0	12	100	108	91	70	64	48	38	7	0	0	0	0
	SE	Beam	79	0	0	0	0	0	0	0	363	438	409	336	234	120	0	0	0	0	0	0	0
		Diffuse	38	0	0	0	0	0	0	0	13	138	173	179	165	129	80	34	6	0	0	0	0
	S	Beam	107	0	0	0	0	0	0	0	279	413	474	495	477	425	0	0	0	0	0	0	0
		Diffuse	46	0	0	0	0	0	0	0	12	113	166	198	212	201	168	38	6	0	0	0	0
	SW	Beam	72	0	0	0	0	0	0	0	32	146	262	364	440	480	0	0	0	0	0	0	0
		Diffuse	37	0	0	0	0	0	0	0	11	41	91	137	173	190	184	42	7	0	0	0	0
	W	Beam	18	0	0	0	0	0	0	0	0	0	0	0	20	145	255	0	0	0	0	0	0
		Diffuse	21	0	0	0	0	0	0	0	12	31	52	65	71	102	119	38	7	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	0	0	13	31	52	65	70	64	48	34	6	0	0	0	0
	Horiz.	Beam	32	0	0	0	0	0	0	12	52	106	139	149	136	102	53	9	0	0	0	0	0
Diffuse		27	0	0	0	0	0	2	15	58	90	112	121	110	82	43	7	0	0	0	0	0	
Global		58	0	0	0	0	0	2	27	109	196	251	270	246	185	96	16	0	0	0	0	0	
February Sunrise: 0714 Sunset: 1731	Normal to beam		339	0	0	0	0	0	216	488	511	455	447	489	521	444	156	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	33	0	0	0	0	0	5	35	64	102	137	144	123	89	57	28	1	0	0	0	0
	NE	Beam	2	0	0	0	0	0	0	47	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	34	0	0	0	0	0	5	55	64	102	137	144	123	89	57	28	1	0	0	0	0
	E	Beam	35	0	0	0	0	0	0	181	329	237	102	0	0	0	0	0	0	0	0	0	0
		Diffuse	44	0	0	0	0	0	5	97	155	179	176	144	123	89	57	28	1	0	0	0	0
	SE	Beam	86	0	0	0	0	0	0	208	469	459	355	274	201	97	0	0	0	0	0	0	0
		Diffuse	63	0	0	0	0	0	5	105	195	258	286	261	195	113	57	28	1	0	0	0	0
	S	Beam	119	0	0	0	0	0	0	114	335	412	400	402	423	407	288	75	0	0	0	0	0
		Diffuse	75	0	0	0	0	0	5	76	156	241	306	318	282	211	137	57	1	0	0	0	0
	SW	Beam	87	0	0	0	0	0	0	4	123	210	294	398	478	429	148	0	0	0	0	0	0
		Diffuse	62	0	0	0	0	0	5	35	62	138	223	270	272	234	177	81	1	0	0	0	0
	W	Beam	36	0	0	0	0	0	0	0	0	0	0	14	139	270	318	135	0	0	0	0	0
		Diffuse	44	0	0	0	0	0	5	35	64	102	137	145	170	168	145	77	1	0	0	0	0
	NW	Beam	3	0	0	0	0	0	0	0	0	0	0	0	0	0	21	42	0	0	0	0	0
		Diffuse	34	0	0	0	0	0	5	35	64	102	137	144	123	89	61	47	1	0	0	0	0
	Horiz.	Beam	53	0	0	0	0	0	0	35	136	188	192	196	202	183	113	20	1	0	0	0	0
Diffuse		60	0	0	0	0	2	8	70	111	182	257	272	226	155	100	58	2	0	0	0	0	
Global		113	0	0	0	0	2	8	104	247	371	449	468	428	338	213	78	2	0	0	0	0	
March Sunrise: 0608 Sunset: 1824	Normal to beam		394	0	0	0	0	110	449	615	658	665	665	664	622	507	156	10	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	46	0	0	0	0	2	41	74	104	133	154	158	148	117	90	60	19	0	0	0	0
	NE	Beam	9	0	0	0	0	0	54	126	29	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	48	0	0	0	0	2	67	107	98	133	154	158	148	117	90	60	19	0	0	0	0
	E	Beam	55	0	0	0	0	0	104	375	408	295	133	0	0	0	0	0	0	0	0	0	0
		Diffuse	59	0	0	0	0	2	83	178	201	198	171	158	148	117	90	60	19	0	0	0	0
	SE	Beam	111	0	0	0	0	0	93	404	548	541	462	347	208	51	0	0	0	0	0	0	0
		Diffuse	73	0	0	0	0	2	79	187	238	269	273	242	187	115	90	60	19	0	0	0	0
	S	Beam	140	0	0	0	0	0	28	197	367	471	520	530	503	414	268	55	2	0	0	0	0
		Diffuse	82	0	0	0	0	2	58	128	189	249	291	300	278	213	157	88	19	0	0	0	0
	SW	Beam	102	0	0	0	0	0	0	0	0	124	274	403	504	535	458	138	8	0	0	0	0
		Diffuse	71	0	0	0	0	2	41	74	104	149	214	259	278	246	209	115	19	0	0	0	0
	W	Beam	47	0	0	0	0	0	0	0	0	0	0	40	210	343	379	139	10	0	0	0	0
		Diffuse	57	0	0	0	0	2	41	74	104	133	154	145	188	194	188	115	19	0	0	0	0
	NW	Beam	6	0	0	0	0	0	0	0	0	0	0	0	0	0	79	59	6	0	0	0	0
		Diffuse	48	0	0	0	0	2	41	74	104	133	154	158	148	117	105	89	19	0	0	0	0
	Horiz.	Beam	106	0	0	0	0	1	21	149	277	354	392	399	379	313	203	42	1	0	0	0	0
Diffuse		77	0	0	0	2	4	85	130	167	215	252	260	240	187	152	122	38	0	0	0	0	
Global		183	0	0	0	2	5	106	279	444	569	643	659	620	501	355	164	39	0	0	0	0	

Table continues

**Table 2.13(h)** Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: Manchester (Hulme Library) (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 Sunrise: 0455 Sunset: 1920	Normal to beam		415	0	0	0	0	61	458	567	642	640	653	653	653	643	594	423	0	0	0	
	N	Beam	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	67	0	0	0	8	55	81	112	147	166	191	191	182	162	129	92	58	30	0	0
	NE	Beam	23	0	0	0	0	44	247	185	63	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	71	0	0	0	8	68	147	150	143	166	191	191	182	162	129	92	58	30	0	0
	E	Beam	71	0	0	0	0	60	420	451	399	259	105	0	0	0	0	0	0	0	0	0
		Diffuse	83	0	0	0	8	72	195	221	238	214	193	191	182	162	129	92	58	31	0	0
	SE	Beam	106	0	0	0	0	40	347	453	502	451	375	260	124	0	0	0	0	0	0	0
		Diffuse	91	0	0	0	8	66	175	221	267	268	277	240	190	162	129	92	58	31	0	0
	S	Beam	121	0	0	0	0	0	70	189	310	379	426	430	400	336	241	120	2	0	0	0
		Diffuse	93	0	0	0	8	43	97	151	213	248	293	292	275	238	178	113	57	30	0	0
	SW	Beam	119	0	0	0	0	0	0	0	0	84	227	348	441	500	514	459	290	0	0	0
		Diffuse	94	0	0	0	8	43	81	112	147	165	231	267	288	288	256	204	140	30	0	0
	W	Beam	87	0	0	0	0	0	0	0	0	0	0	62	224	371	485	529	408	0	0	0
		Diffuse	86	0	0	0	8	43	81	112	147	166	191	179	221	249	247	223	174	31	0	0
	NW	Beam	32	0	0	0	0	0	0	0	0	0	0	0	25	173	290	287	0	0	0	0
		Diffuse	73	0	0	0	8	43	81	112	147	166	191	191	182	143	158	158	139	31	0	0
	Horiz.	Beam	161	0	0	0	1	14	169	286	395	446	484	488	465	418	345	243	111	9	0	0
Diffuse		109	0	0	0	13	92	141	183	236	266	312	311	296	263	207	148	102	47	0	0	
Global		270	0	0	0	13	105	310	469	631	712	797	799	762	682	552	391	213	57	0	0	
May Sunrise: 0358 Sunset: 2012	Normal to beam		480	0	0	0	7	171	426	672	837	915	943	956	949	904	787	583	384	107	0	0
	N	Beam	4	0	0	0	2	21	0	0	0	0	0	0	0	0	0	0	34	31	0	0
		Diffuse	67	0	0	0	30	98	109	124	133	140	145	144	139	130	121	108	95	69	12	0
	NE	Beam	31	0	0	0	6	128	244	247	124	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	71	0	0	0	30	135	180	160	126	140	145	144	139	130	121	108	84	48	12	0
	E	Beam	85	0	0	0	7	160	373	510	494	348	137	0	0	0	0	0	0	0	0	0
		Diffuse	78	0	0	0	30	146	220	220	189	160	132	144	139	130	121	108	84	48	12	0
	SE	Beam	119	0	0	0	3	98	284	473	574	559	456	300	107	0	0	0	0	0	0	0
		Diffuse	79	0	0	0	30	124	192	211	202	189	174	152	123	130	121	108	84	48	12	0
	S	Beam	128	0	0	0	0	0	28	160	318	442	508	519	472	364	210	58	0	0	0	0
		Diffuse	74	0	0	0	30	78	114	140	159	173	181	180	171	156	136	110	84	48	12	0
	SW	Beam	132	0	0	0	0	0	0	0	66	262	434	560	611	555	394	228	49	0	0	0
		Diffuse	80	0	0	0	30	78	109	124	133	120	149	169	182	191	200	196	156	76	12	0
	W	Beam	102	0	0	0	0	0	0	0	0	0	95	320	500	575	500	356	100	0	0	0
		Diffuse	81	0	0	0	30	78	109	124	133	140	145	126	151	175	204	223	197	93	12	0
	NW	Beam	43	0	0	0	0	0	0	0	0	0	0	0	96	258	313	276	92	0	0	0
		Diffuse	73	0	0	0	30	78	109	124	133	140	145	144	139	117	145	175	171	91	12	0
	Horiz.	Beam	248	0	0	0	1	57	203	407	596	722	783	797	759	660	495	294	140	23	0	0
Diffuse		86	0	0	0	58	158	194	183	160	149	146	142	138	141	156	172	154	101	20	0	
Global		334	0	0	0	60	215	398	590	756	871	929	939	898	801	651	466	294	124	20	0	
June Sunrise: 0337 Sunset: 2043	Normal to beam		483	0	0	0	144	356	549	694	767	803	825	826	617	745	741	669	482	266	203	0
	N	Beam	14	0	0	0	53	63	0	0	0	0	0	0	0	0	0	0	51	79	99	0
		Diffuse	79	0	2	21	78	106	109	126	142	153	159	160	174	150	131	112	101	96	70	5
	NE	Beam	48	0	0	0	130	275	331	280	145	0	0	0	0	0	0	0	0	0	0	0
		Diffuse	84	0	2	22	105	174	185	166	142	153	159	160	174	150	131	112	92	64	31	5
	E	Beam	98	0	0	0	130	326	474	523	455	314	134	0	0	0	0	0	0	0	0	0
		Diffuse	92	0	2	21	105	191	223	218	201	178	149	160	174	150	131	112	92	64	31	5
	SE	Beam	112	0	0	0	55	186	340	459	498	465	379	245	63	0	0	0	0	0	0	0
		Diffuse	90	0	2	21	79	145	188	204	209	205	191	169	165	150	131	112	92	64	31	5
	S	Beam	97	0	0	0	0	6	127	249	344	402	410	281	274	176	51	0	0	0	0	0
		Diffuse	82	0	2	21	50	84	99	132	162	184	195	197	218	176	142	106	92	64	31	5
	SW	Beam	113	0	0	0	0	0	0	0	0	21	189	334	334	469	492	429	272	116	54	0
		Diffuse	91	0	2	22	50	84	109	126	142	126	159	184	231	215	205	191	164	109	54	5
	W	Beam	107	0	0	0	0	0	0	0	0	0	63	191	390	519	555	436	243	176	0	0
		Diffuse	95	0	2	21	50	84	109	126	142	153	159	138	196	199	211	219	211	152	97	5
	NW	Beam	60	0	0	0	0	0	0	0	0	0	0	0	82	242	356	344	228	194	0	0
		Diffuse	87	0	2	21	50	84	109	126	142	153	159	160	174	138	155	174	185	147	103	5
	Horiz.	Beam	241	0	0	3	32	130	277	438	566	654	707	715	515	573	499	370	201	73	27	0
Diffuse		108	3	3	35	103	156	178	181	186	192	194	195	269	202	178	165	158	124	62	8	
Global		349	3	3	37	135	286	455	619	752	846	901	909	784	775	677	535	359	197	89	8	

Table continues

**Table 2.13(h)** Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: Manchester (Hulme Library) (2002–2011)  
— continued

Month	Orientation		Daily mean irradiance ( $W \cdot m^{-2}$ ) and mean hourly irradiance ( $W \cdot m^{-2}$ ) 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		500	0	0	0	205	452	574	646	718	739	780	785	761	716	670	611	483	365	0	0	
	N	Beam	11	0	0	0	73	73	0	0	0	0	0	0	0	0	0	0	29	93	0	0	
		Diffuse	73	0	0	6	70	89	98	121	139	153	158	159	156	148	132	111	89	87	31	2	
	NE	Beam	53	0	0	0	185	350	347	262	134	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	82	0	0	6	110	171	176	164	142	153	158	159	156	148	132	111	87	56	31	2	
	E	Beam	105	0	0	0	189	422	509	504	445	308	144	0	0	0	0	0	0	0	0	0	
		Diffuse	91	0	0	6	111	193	218	221	207	186	154	159	156	148	132	111	87	56	33	2	
	SE	Beam	120	0	0	0	81	247	373	452	495	460	393	268	110	0	0	0	0	0	0	0	
		Diffuse	89	0	0	6	73	141	183	208	217	217	201	178	148	148	132	111	87	56	33	2	
	Sunrise: 0405 Sunset: 2025	S	Beam	106	0	0	0	0	0	18	134	255	343	412	426	384	299	194	77	0	0	0	0
			Diffuse	81	0	0	6	40	71	91	134	167	194	204	207	201	184	154	115	87	56	31	2
		SW	Beam	117	0	0	0	0	0	0	0	0	25	190	334	432	474	470	417	293	175	0	0
			Diffuse	88	0	0	6	40	71	98	121	139	130	163	190	210	221	217	198	165	113	31	2
		W	Beam	101	0	0	0	0	0	0	0	0	0	0	46	228	372	471	513	444	341	0	0
			Diffuse	89	0	0	6	40	71	98	121	139	153	158	137	171	199	217	222	208	166	33	2
		NW	Beam	50	0	0	0	0	0	0	0	0	0	0	0	0	51	196	308	334	307	0	0
			Diffuse	80	0	0	6	40	71	98	121	139	153	158	159	156	132	155	171	177	155	33	2
	Horiz.	Beam	225	0	0	0	35	143	263	382	502	577	646	658	616	534	435	323	188	89	15	0	
Diffuse		102	0	2	10	79	124	157	183	194	208	205	205	208	207	194	172	149	104	47	3		
Global		327	0	2	11	114	267	421	564	696	786	851	864	824	741	629	495	337	193	62	3		
August	Normal to beam		402	0	0	0	0	12	187	497	644	715	682	780	809	760	663	449	236	0	0	0	
	N	Beam	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	57	0	0	0	8	38	85	111	128	140	152	145	137	127	113	95	64	34	2	0	
	NE	Beam	15	0	0	0	0	9	104	172	75	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	61	0	0	0	8	38	134	152	127	140	152	145	137	127	113	95	64	34	2	0	
	E	Beam	59	0	0	0	0	11	172	401	410	302	122	0	0	0	0	0	0	0	0	0	
		Diffuse	70	0	0	0	8	38	158	217	206	179	154	145	137	127	113	95	64	35	2	0	
	SE	Beam	102	0	0	0	0	8	140	396	504	508	398	321	166	0	0	0	0	0	0	0	
		Diffuse	76	0	0	0	8	38	146	216	228	223	216	178	139	127	113	95	64	34	2	0	
	Sunrise: 0456 Sunset: 1928	S	Beam	130	0	0	0	0	0	25	158	303	416	441	513	498	398	256	96	5	0	0	0
			Diffuse	79	0	0	0	8	38	106	148	181	204	226	214	199	181	154	120	73	34	2	0
		SW	Beam	120	0	0	0	0	0	0	0	0	81	225	405	538	578	530	348	164	0	0	0
			Diffuse	78	0	0	0	8	38	85	111	128	132	177	194	206	217	217	195	128	34	2	0
		W	Beam	77	0	0	0	0	0	0	0	0	0	0	59	263	421	493	396	227	0	0	0
			Diffuse	72	0	0	0	8	38	85	111	128	140	152	128	156	186	209	210	150	35	2	0
		NW	Beam	23	0	0	0	0	0	0	0	0	0	0	0	0	16	168	212	157	0	0	0
			Diffuse	62	0	0	0	8	38	85	111	128	140	152	145	137	106	134	154	126	34	2	0
	Horiz.	Beam	167	0	0	0	0	3	68	248	394	496	506	585	581	493	363	188	65	8	0	0	
Diffuse		88	0	0	0	13	74	171	190	194	197	222	190	172	170	168	168	127	54	3	0		
Global		255	0	0	0	14	77	239	438	588	694	728	775	753	664	531	356	192	62	3	0		
September	Normal to beam		404	0	0	0	0	0	304	342	624	620	644	641	635	638	607	596	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	46	0	0	0	0	23	52	82	111	129	144	144	133	115	86	55	28	1	0	0	
	NE	Beam	9	0	0	0	0	0	137	79	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	49	0	0	0	0	24	98	109	111	129	144	144	133	115	86	55	33	1	0	0	
	E	Beam	53	0	0	0	0	0	282	274	385	243	90	0	0	0	0	0	0	0	0	0	
		Diffuse	60	0	0	0	0	25	143	168	201	178	148	144	133	115	86	55	36	1	0	0	
	SE	Beam	105	0	0	0	0	0	262	308	547	492	422	303	163	15	0	0	0	0	0	0	
		Diffuse	71	0	0	0	0	24	136	178	245	245	242	207	159	102	86	55	31	1	0	0	
	Sunrise: 0549 Sunset: 1815	S	Beam	144	0	0	0	0	0	89	162	389	453	506	506	468	404	296	183	0	0	0	0
			Diffuse	81	0	0	0	0	23	82	134	202	235	266	264	243	211	155	97	28	1	0	0
		SW	Beam	124	0	0	0	0	0	0	0	3	148	294	412	498	557	547	517	0	0	0	0
			Diffuse	75	0	0	0	0	24	52	82	97	152	206	238	252	253	222	187	33	1	0	0
		W	Beam	72	0	0	0	0	0	0	0	0	0	0	77	237	383	478	548	0	0	0	0
			Diffuse	63	0	0	0	0	25	52	82	111	129	144	144	179	205	204	195	36	1	0	0
		NW	Beam	16	0	0	0	0	0	0	0	0	0	0	0	0	0	129	258	0	0	0	0
			Diffuse	50	0	0	0	0	24	52	82	111	129	144	144	133	115	110	118	31	1	0	0
	Horiz.	Beam	113	0	0	0	0	9	71	127	300	347	387	386	358	311	229	145	53	0	0	0	
Diffuse		75	0	0	0	2	36	99	152	178	207	231	230	212	184	138	89	34	5	0	0		
Global		188	0	0	0	2	46	170	279	478	554	618	616	570	495	367	234	87	5	0	0		

Table continues

**Table 2.13(h)** Design 97.5 percentile of beam and diffuse irradiance on vertical and horizontal surfaces: Manchester (Hulme Library) (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	Normal to beam		335	0	0	0	0	0	0	296	279	630	647	625	567	521	456	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	30	0	0	0	0	0	29	50	74	94	104	101	88	69	82	20	0	0	0	0	0	
	NE	Beam	1	0	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	30	0	0	0	0	0	29	64	74	94	104	101	88	69	82	24	0	0	0	0	0	
	E	Beam	28	0	0	0	0	0	0	226	161	221	66	0	0	0	0	0	0	0	0	0	0	
		Diffuse	37	0	0	0	0	0	33	124	130	141	108	101	88	69	82	24	0	0	0	0	0	
	SE	Beam	86	0	0	0	0	0	0	286	261	534	456	325	172	38	0	0	0	0	0	0	0	
		Diffuse	52	0	0	0	0	0	33	143	162	226	216	175	125	74	82	20	0	0	0	0	0	
	Sunrise: 0643 Sunset: 1704	S	Beam	132	0	0	0	0	0	179	209	533	579	556	471	377	262	0	0	0	0	0	0	
			Diffuse	68	0	0	0	0	0	29	109	145	226	250	238	205	167	234	20	0	0	0	0	0
		SW	Beam	105	0	0	0	0	0	0	34	220	363	462	494	494	442	0	0	0	0	0	0	
			Diffuse	62	0	0	0	0	0	29	50	90	141	190	212	211	199	341	24	0	0	0	0	0
		W	Beam	42	0	0	0	0	0	0	0	0	0	0	97	227	323	363	0	0	0	0	0	0
			Diffuse	45	0	0	0	0	0	33	50	74	94	104	113	140	152	295	24	0	0	0	0	0
		NW	Beam	3	0	0	0	0	0	0	0	0	0	0	0	0	72	0	0	0	0	0	0	
			Diffuse	31	0	0	0	0	0	33	50	74	94	104	101	88	69	121	20	0	0	0	0	0
Horiz.	Beam	63	0	0	0	0	0	41	66	91	252	282	269	219	160	89	37	0	0	0	0	0		
	Diffuse	50	0	0	0	0	3	36	96	142	150	167	161	144	116	161	22	2	0	0	0	0		
	Global	113	0	0	0	0	3	77	161	233	402	449	431	363	276	250	59	2	0	0	0	0		
November	Normal to beam		288	0	0	0	0	0	0	458	494	504	504	482	442	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	15	0	0	0	0	0	0	26	40	58	67	66	55	37	19	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	0	23	40	58	67	66	55	37	21	0	0	0	0	0	0	
	E	Beam	20	0	0	0	0	0	0	255	168	52	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	21	0	0	0	0	0	0	26	111	103	78	66	55	37	19	0	0	0	0	0	0	
	SE	Beam	74	0	0	0	0	0	0	443	436	376	287	176	64	0	0	0	0	0	0	0	0	
		Diffuse	36	0	0	0	0	0	0	28	164	179	172	145	102	54	17	0	0	0	0	0	0	
	Sunrise: 0742 Sunset: 1607	S	Beam	107	0	0	0	0	0	0	372	448	480	478	431	350	0	0	0	0	0	0	0	
			Diffuse	45	0	0	0	0	0	0	26	144	183	202	201	175	135	19	0	0	0	0	0	0
		SW	Beam	77	0	0	0	0	0	0	83	198	303	389	433	431	0	0	0	0	0	0	0	
			Diffuse	37	0	0	0	0	0	0	23	62	111	151	175	158	21	0	0	0	0	0	0	0
		W	Beam	21	0	0	0	0	0	0	0	0	0	72	182	260	0	0	0	0	0	0	0	0
			Diffuse	21	0	0	0	0	0	0	26	40	58	67	83	104	109	19	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	28	40	58	67	66	55	37	17	0	0	0	0	0	0
Horiz.	Beam	30	0	0	0	0	0	33	82	123	143	141	115	72	24	0	0	0	0	0	0	0		
	Diffuse	26	0	0	0	0	2	4	31	71	100	115	114	95	65	23	0	0	0	0	0	0		
	Global	56	0	0	0	0	2	4	63	152	223	258	255	210	136	47	0	0	0	0	0	0		
December	Normal to beam		254	0	0	0	0	0	0	0	526	523	376	385	224	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	6	35	48	60	51	43	28	11	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	6	32	48	60	51	43	28	12	0	0	0	0	0	0	
	E	Beam	12	0	0	0	0	0	0	0	199	78	0	0	0	0	0	0	0	0	0	0	0	
		Diffuse	15	0	0	0	0	0	0	6	33	110	82	51	43	28	11	0	0	0	0	0	0	
	SE	Beam	56	0	0	0	0	0	0	0	479	412	234	164	48	0	0	0	0	0	0	0	0	
		Diffuse	30	0	0	0	0	0	0	7	37	202	196	119	91	47	10	0	0	0	0	0	0	
	Sunrise: 0819 Sunset: 1554	S	Beam	79	0	0	0	0	0	0	0	478	504	365	356	187	0	0	0	0	0	0	0	
			Diffuse	36	0	0	0	0	0	0	6	35	202	227	157	147	90	11	0	0	0	0	0	0
		SW	Beam	56	0	0	0	0	0	0	0	197	302	282	340	217	0	0	0	0	0	0	0	
			Diffuse	29	0	0	0	0	0	0	6	32	109	158	133	142	100	12	0	0	0	0	0	0
		W	Beam	12	0	0	0	0	0	0	0	0	0	34	125	120	0	0	0	0	0	0	0	0
			Diffuse	15	0	0	0	0	0	0	6	33	48	60	61	80	69	11	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	7	37	48	60	51	43	28	10	0	0	0	0	0	0
Horiz.	Beam	19	0	0	0	0	0	6	33	95	116	85	74	28	12	0	0	0	0	0	0	0		
	Diffuse	20	0	0	0	0	1	8	44	84	106	92	79	56	14	0	0	0	0	0	0	0		
	Global	39	0	0	0	0	1	14	77	178	222	177	153	84	26	0	0	0	0	0	0	0		