

APPENDIX I
Blackbody Spectral Distribution Function

The Planck function divided by the fifth power of the temperature and the Stefan-Boltzmann constant is multiplied by 100,000 so that it plots nicely versus the wavelength-temperature product, λT , as in Figure 11.27. SIGMA was calculated by summing the product of the tabulated Planck function and the abscissa interval (100) to the desired value of λT . The sum must then be divided by 1000 to compensate for the 100,000 factor. Note the distinction between the Stefan-Boltzmann constant (Sigma) and the cumulative radiation function (SIGMA).

c1 = 118700000 Btu-micron⁴/ft²-hr
c2 = 25896 micron-degree R

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T ⁵ 1/(micron-R) x100,000	SIGMA dimensionless
1000	3.926E-05	3.926E-08
1100	0.000256682	2.95942E-07
1200	0.001181568	1.47751E-06
1300	0.004164636	5.64215E-06
1400	0.011928687	1.75708E-05
1500	0.028995038	4.65659E-05
1600	0.061770887	0.000108337
1700	0.11819881	0.000226536
1800	0.207027327	0.000433563
1900	0.336873778	0.000770437
2000	0.515283226	0.00128572
2100	0.747952401	0.002033672
2200	1.038219036	0.003071891
2300	1.386845559	0.004458737
2400	1.792070875	0.006250808
2500	2.249871296	0.008500679
2600	2.754359627	0.011255039
2700	3.298254226	0.014553293
2800	3.87336131	0.018426654
2900	4.471028633	0.022897683
3000	5.082543507	0.027980226
3100	5.699460885	0.033679687
3200	6.313857168	0.039993544
3300	6.918512359	0.046912057
3400	7.507027618	0.054419084
3500	8.073887592	0.062492972
3600	8.614477758	0.07110745
3700	9.12506675	0.080232516
3800	9.602762863	0.089835279
3900	10.04545268	0.099880732

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T^5 1/(micron-R) x100,000	SIGMA dimensionless
4000	10.45172852	0.110332461
4100	10.82081001	0.121153271
4200	11.152464	0.132305735
4300	11.44692597	0.143752661
4400	11.70482499	0.155457486
4500	11.9271139	0.167384599
4600	12.11500549	0.179499605
4700	12.26991521	0.19176952
4800	12.39341038	0.204162931
4900	12.48716597	0.216650096
5000	12.55292639	0.229203023
5100	12.59247315	0.241795496
5200	12.6075976	0.254403094
5300	12.60007853	0.267003172
5400	12.5716639	0.279574836
5500	12.52405626	0.292098892
5600	12.45890147	0.304557794
5700	12.37778011	0.316935574
5800	12.28220131	0.329217775
5900	12.17359857	0.341391374
6000	12.05332729	0.353444701
6100	11.92266363	0.365367365
6200	11.78280457	0.377150169
6300	11.6348688	0.388785038
6400	11.47989844	0.400264937
6500	11.31886126	0.411583798
6600	11.15265333	0.422736451
6700	10.98210197	0.433718553
6800	10.80796898	0.444526522
6900	10.63095392	0.455157476
7000	10.4516975	0.465609173
7100	10.27078501	0.475879958
7200	10.08874964	0.485968708
7300	9.906075829	0.495874784
7400	9.723202485	0.505597986
7500	9.540526075	0.515138513
7600	9.358403632	0.524496916
7700	9.177155612	0.533674072
7800	8.997068608	0.54267114
7900	8.818397933	0.551489538
8000	8.641370049	0.560130908
8100	8.466184858	0.568597093
8200	8.293017853	0.576890111
8300	8.12202213	0.585012133
8400	7.95333027	0.592965463
8500	7.787056092	0.60075252
8600	7.623296286	0.608375816
8700	7.462131926	0.615837948
8800	7.303629879	0.623141578
8900	7.147844105	0.630289422

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T^5 1/(micron-R) x100,000	SIGMA dimensionless
9000	6.994816861	0.637284239
9100	6.844579811	0.644128818
9200	6.697155054	0.650825973
9300	6.552556067	0.65737853
9400	6.410788573	0.663789318
9500	6.271851341	0.670061169
9600	6.135736916	0.676196906
9700	6.002432297	0.682199339
9800	5.871919548	0.688071258
9900	5.744176362	0.693815435
10000	5.619176579	0.699434611
10100	5.496890652	0.704931502
10200	5.377286082	0.710308788
10300	5.260327805	0.715569116
10400	5.145978545	0.720715094
10500	5.034199146	0.725749293
10600	4.924948859	0.730674242
10700	4.818185608	0.735492428
10800	4.713866235	0.740206294
10900	4.611946716	0.744818241
11000	4.512382358	0.749330623
11100	4.415127973	0.753745751
11200	4.320138045	0.758065889
11300	4.227366866	0.762293256
11400	4.136768666	0.766430025
11500	4.048297729	0.770478322
11600	3.961908497	0.774440231
11700	3.877555654	0.778317787
11800	3.795194213	0.782112981
11900	3.714779583	0.78582776
12000	3.636267632	0.789464028
12100	3.559614744	0.793023643
12200	3.484777862	0.796508421
12300	3.41171453	0.799920135
12400	3.340382931	0.803260518
12500	3.270741911	0.80653126
12600	3.202751009	0.809734011
12700	3.136370475	0.812870381
12800	3.071561285	0.815941943
12900	3.008285156	0.818950228
13000	2.946504554	0.821896732
13100	2.886182704	0.824782915
13200	2.82728359	0.827610199
13300	2.769771958	0.830379971
13400	2.713613318	0.833093584
13500	2.658773939	0.835752358
13600	2.60522085	0.838357579
13700	2.552921826	0.840910501
13800	2.501845393	0.843412346
13900	2.451960812	0.845864307

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T^5 1/(micron-R) x100,000	SIGMA dimensionless
14000	2.403238073	0.848267545
14100	2.355647887	0.850623193
14200	2.309161674	0.852932354
14300	2.263751554	0.855196106
14400	2.219390335	0.857415496
14500	2.1760515	0.859591548
14600	2.133709199	0.861725257
14700	2.09233823	0.863817595
14800	2.051914034	0.865869509
14900	2.012412676	0.867881922
15000	1.973810837	0.869855733
15100	1.936085795	0.871791819
15200	1.89921542	0.873691034
15300	1.863178154	0.875554212
15400	1.827953001	0.877382165
15500	1.793519515	0.879175685
15600	1.759857785	0.880935543
15700	1.726948422	0.882662491
15800	1.694772551	0.884357263
15900	1.663311791	0.886020575
16000	1.632548251	0.887653124
16100	1.60246451	0.889255588
16200	1.573043612	0.890828632
16300	1.544269048	0.892372901
16400	1.51612475	0.893889025
16500	1.488595076	0.895377621
16600	1.4616648	0.896839285
16700	1.435319102	0.898274604
16800	1.409543555	0.899684148
16900	1.384324117	0.901068472
17000	1.359647121	0.902428119
17100	1.335499261	0.903763618
17200	1.311867588	0.905075486
17300	1.288739494	0.906364226
17400	1.266102709	0.907630328
17500	1.243945289	0.908874274
17600	1.222255604	0.910096529
17700	1.201022337	0.911297552
17800	1.180234467	0.912477786
17900	1.159881267	0.913637667
18000	1.139952293	0.914777762
18100	1.120437377	0.915898057
18200	1.10132662	0.916999384
18300	1.082610382	0.918081994
18400	1.06427928	0.919146273
18500	1.046324175	0.920192597
18600	1.028736168	0.921221334
18700	1.011506593	0.92223284
18800	0.994627013	0.923227467
18900	0.978089209	0.924205556

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T^5 1/(micron-R) x100,000	SIGMA dimensionless
19000	0.961885177	0.925167442
19100	0.946007123	0.926113449
19200	0.930447451	0.927043896
19300	0.915198768	0.927959095
19400	0.900253868	0.928859349
19500	0.885605733	0.929744954
19600	0.871247525	0.930616202
19700	0.857172583	0.931473375
19800	0.843374417	0.932316749
19900	0.829846703	0.933146596
20000	0.816583279	0.933963179
20100	0.80357814	0.934766757
20200	0.790825435	0.935557583
20300	0.778319459	0.936335902
20400	0.766054655	0.937101957
20500	0.754025605	0.937855982
20600	0.742227027	0.938598209
20700	0.730653775	0.939328863
20800	0.719300828	0.940048164
20900	0.708163296	0.940756327
21000	0.697236407	0.941453564
21100	0.686515509	0.942140079
21200	0.675996069	0.942816075
21300	0.665673662	0.943481749
21400	0.655543976	0.944137293
21500	0.645602804	0.944782896
21600	0.635846044	0.945418742
21700	0.626269693	0.946045011
21800	0.616869849	0.946661881
21900	0.607642702	0.947269524
22000	0.598584538	0.947868108
22100	0.589691733	0.9484578
22200	0.580960749	0.949038761
22300	0.572388137	0.949611149
22400	0.563970528	0.95017512
22500	0.555704637	0.950730824
22600	0.547587256	0.951278411
22700	0.539615256	0.951818027
22800	0.531785581	0.952349812
22900	0.524095249	0.952873908
23000	0.516541348	0.953390449
23100	0.509121036	0.95389957
23200	0.501831539	0.954401402
23300	0.494670147	0.954896072
23400	0.487634214	0.955383706
23500	0.480721158	0.955864427
23600	0.473928455	0.956338355
23700	0.467253643	0.956805609
23800	0.460694314	0.957266303
23900	0.454248117	0.957720552

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T^5 1/(micron-R) x100,000	SIGMA dimensionless
24000	0.447912759	0.958168464
24100	0.441685995	0.95861015
24200	0.435565634	0.959045716
24300	0.429549536	0.959475265
24400	0.42363561	0.959898901
24500	0.417821812	0.960316723
24600	0.412106146	0.960728829
24700	0.406486658	0.961135316
24800	0.400961444	0.961536277
24900	0.395528638	0.961931806
25000	0.390186419	0.962321992
25100	0.384933006	0.962706925
25200	0.379766658	0.963086692
25300	0.374685673	0.963461378
25400	0.369688389	0.963831066
25500	0.364773178	0.964195839
25600	0.359938449	0.964555778
25700	0.355182648	0.96491096
25800	0.350504254	0.965261464
25900	0.345901779	0.965607366
26000	0.341373769	0.96594874
26100	0.336918802	0.966285659
26200	0.332535485	0.966618194
26300	0.328222458	0.966946417
26400	0.323978389	0.967270395
26500	0.319801976	0.967590197
26600	0.315691944	0.967905889
26700	0.311647046	0.968217536
26800	0.307666063	0.968525202
26900	0.3037478	0.96882895
27000	0.299891089	0.969128841
27100	0.296094787	0.969424936
27200	0.292357775	0.969717294
27300	0.288678958	0.970005973
27400	0.285057264	0.97029103
27500	0.281491643	0.970572521
27600	0.277981069	0.970850503
27700	0.274524537	0.971125027
27800	0.27112106	0.971396148
27900	0.267769677	0.971663918
28000	0.264469442	0.971928387
28100	0.261219432	0.972189607
28200	0.258018743	0.972447625
28300	0.254866487	0.972702492
28400	0.251761797	0.972954254
28500	0.248703823	0.973202958
28600	0.245691732	0.973448649
28700	0.242724709	0.973691374
28800	0.239801956	0.973931176
28900	0.236922689	0.974168099

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T^5 1/(micron-R) x100,000	SIGMA dimensionless
29000	0.234086142	0.974402185
29100	0.231291563	0.974633476
29200	0.228538218	0.974862015
29300	0.225825385	0.97508784
29400	0.223152357	0.975310992
29500	0.220518442	0.975531511
29600	0.217922962	0.975749434
29700	0.215365251	0.975964799
29800	0.212844659	0.976177644
29900	0.210360545	0.976388004
30000	0.207912285	0.976595916
30100	0.205499264	0.976801416
30200	0.20312088	0.977004537
30300	0.200776545	0.977205313
30400	0.198465679	0.977403779
30500	0.196187716	0.977599967
30600	0.1939421	0.977793909
30700	0.191728285	0.977985637
30800	0.189545739	0.978175183
30900	0.187393935	0.978362577
31000	0.185272361	0.978547849
31100	0.183180512	0.978731029
31200	0.181117894	0.978912147
31300	0.179084023	0.979091231
31400	0.177078421	0.97926831
31500	0.175100623	0.97944341
31600	0.173150172	0.979616561
31700	0.171226618	0.979787787
31800	0.16932952	0.979957117
31900	0.167458447	0.980124575
32000	0.165612974	0.980290188
32100	0.163792686	0.980453981
32200	0.161997174	0.980615978
32300	0.160226038	0.980776204
32400	0.158478884	0.980934683
32500	0.156755326	0.981091438
32600	0.155054987	0.981246493
32700	0.153377494	0.981399871
32800	0.151722482	0.981551593
32900	0.150089594	0.981701683
33000	0.148478478	0.981850161
33100	0.146888789	0.98199705
33200	0.145320188	0.98214237
33300	0.143772343	0.982286143
33400	0.142244927	0.982428388
33500	0.14073762	0.982569125
33600	0.139250107	0.982708375
33700	0.137782079	0.982846157
33800	0.136333232	0.982982491
33900	0.134903269	0.983117394

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T^5 1/(micron-R) x100,000	SIGMA dimensionless
34000	0.133491896	0.983250886
34100	0.132098827	0.983382985
34200	0.130723778	0.983513708
34300	0.129366474	0.983643075
34400	0.128026641	0.983771101
34500	0.126704012	0.983897805
34600	0.125398324	0.984023204
34700	0.124109319	0.984147313
34800	0.122836744	0.98427015
34900	0.121580348	0.98439173
35000	0.120339889	0.98451207
35100	0.119115124	0.984631185
35200	0.117905819	0.984749091
35300	0.11671174	0.984865803
35400	0.115532659	0.984981335
35500	0.114368353	0.985095704
35600	0.1132186	0.985208922
35700	0.112083185	0.985321006
35800	0.110961895	0.985431967
35900	0.10985452	0.985541822
36000	0.108760855	0.985650583
36100	0.107680698	0.985758264
36200	0.10661385	0.985864877
36300	0.105560116	0.985970438
36400	0.104519305	0.986074957
36500	0.103491227	0.986178448
36600	0.102475696	0.986280924
36700	0.101472532	0.986382396
36800	0.100481554	0.986482878
36900	0.099502586	0.98658238
37000	0.098535454	0.986680916
37100	0.097579989	0.986778496
37200	0.096636023	0.986875132
37300	0.095703391	0.986970835
37400	0.09478193	0.987065617
37500	0.093871482	0.987159489
37600	0.092971889	0.987252461
37700	0.092082998	0.987344544
37800	0.091204657	0.987435748
37900	0.090336717	0.987526085
38000	0.08947903	0.987615564
38100	0.088631454	0.987704195
38200	0.087793845	0.987791989
38300	0.086966064	0.987878955
38400	0.086147973	0.987965103
38500	0.085339438	0.988050443
38600	0.084540326	0.988134983
38700	0.083750505	0.988218734
38800	0.082969847	0.988301703
38900	0.082198226	0.988383902

Lambda-T micron-R	Fb(Lambda-T)/Sigma-T^5 1/(micron-R) x100,000	SIGMA dimensionless
39000	0.081435515	0.988465337
39100	0.080681594	0.988546019
39200	0.079936341	0.988625955
39300	0.079199638	0.988705155
39400	0.078471367	0.988783626
39500	0.077751414	0.988861378
39600	0.077039664	0.988938417
39700	0.076336008	0.989014753
39800	0.075640335	0.989090394
39900	0.074952537	0.989165346
40000	0.074272508	0.989239619
40100	0.073600143	0.989313219
40200	0.07293534	0.989386154
40300	0.072277996	0.989458432
40400	0.071628013	0.98953006
40500	0.070985292	0.989601045
40600	0.070349736	0.989671395
40700	0.069721249	0.989741116
40800	0.069099739	0.989810216
40900	0.068485113	0.989878701
41000	0.067877279	0.989946578
41100	0.067276149	0.990013855
41200	0.066681634	0.990080536
41300	0.066093647	0.99014663
41400	0.065512104	0.990212142
41500	0.064936919	0.990277079
41600	0.06436801	0.990341447
41700	0.063805295	0.990405252
41800	0.063248693	0.990468501
41900	0.062698126	0.990531199
42000	0.062153516	0.990593353
42100	0.061614785	0.990654967
42200	0.061081858	0.990716049
42300	0.06055466	0.990776604
42400	0.060033118	0.990836637
42500	0.059517159	0.990896154
42600	0.059006713	0.990955161
42700	0.058501708	0.991013663
42800	0.058002076	0.991071665
42900	0.057507748	0.991129172
43000	0.057018658	0.991186191
43100	0.056534738	0.991242726
43200	0.056055925	0.991298782
43300	0.055582153	0.991354364
43400	0.055113359	0.991409477
43500	0.054649481	0.991464127
43600	0.054190457	0.991518317
43700	0.053736227	0.991572053
43800	0.053286731	0.99162534
43900	0.05284191	0.991678182
44000	0.052401706	0.991730584