

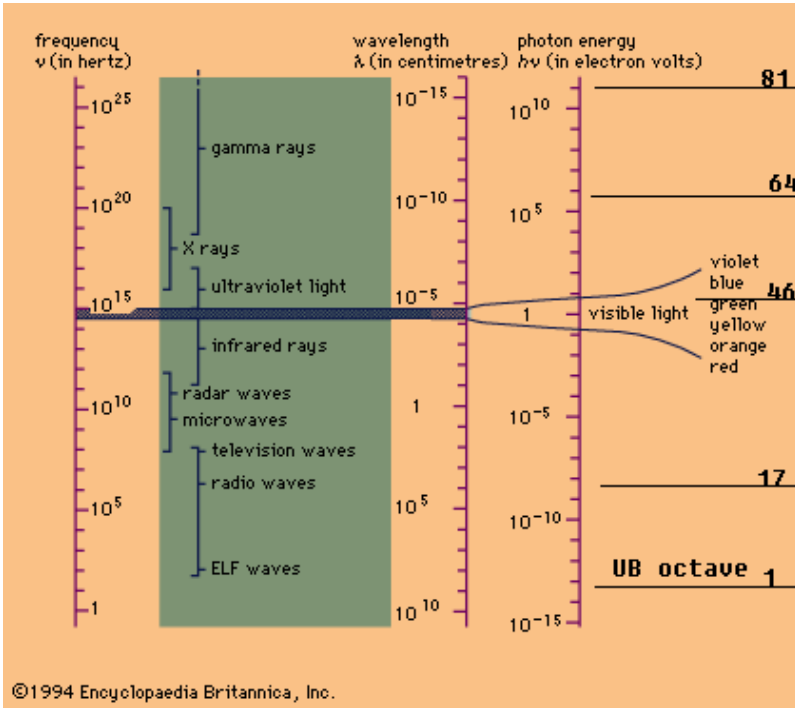
The octave wave energy spectrum

The Merriam-Webster's Collegiate Dictionary Electronic Edition 1994-5 says: "Octave ... 4: the interval between two frequencies (as in an electromagnetic spectrum) having a ratio of 2 to 1". For those interested in the scientific use of the octave wave energy spectrum, from The Urantia Papers p. 474, I compiled the following tables. The frequency is fixed so, that octave No. 46, the visible part of sunlight, is correct. Octave 46 starts at the end of octave 45. In the Octave Electromagnetic Spectrum the upper frequency in each octave number "n" is calculated from the formula:

$$\text{Frequency} = 11 * 2^{(n)}$$

The resulting octave spectrum, resume:

Octave No	Frequency (Hertz)	Wavelength (meter)	Ray type
1	11 ... 22 (E+0)	2.73 ... 1.36 (E+7)	min. energy
.			
17	721 ... 1442 (E+3)	416 ... 208 (E+0)	Radio (1930)
.			
45	1.9 ... 3.9 (E+14)	1.6 ... 0.8 (E-6)	Infrared
46	3.9 ... 7.7 (E+14)	0.8 ... 0.4 (E-6)	Visible
47	7.7 ... 15.5 (E+14)	0.4 ... 0.2 (E-6)	Ultraviolet
.			
56	4 ... 8 (E+17)	7.5 ... 3.8 (E-10)	X-ray
.			
59	3.2 ... 6.3 (E+18)	9.5 ... 4.7 (E-11)	Gamma
.			
64	1 ... 2 (E+20)	3 ... 1.5 (E-12)	Electron anihil.
.			
78	1.7 ... 3.3 (E+24)	1.8 ... 0.9 (E-16)	Outer-space
.			
84	1.0 ... 2.1 (E+26)	2.8 ... 1.4 (E-18)	Ultimatonic
.			
100	7 ... 14 (E+30)	4.3 ... 2.15 (E-23)	Infraultimatonic



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I have also calculated the energy in eV ("electron Volt"), because this quantity is frequently used for the high energy part of the spectrum:

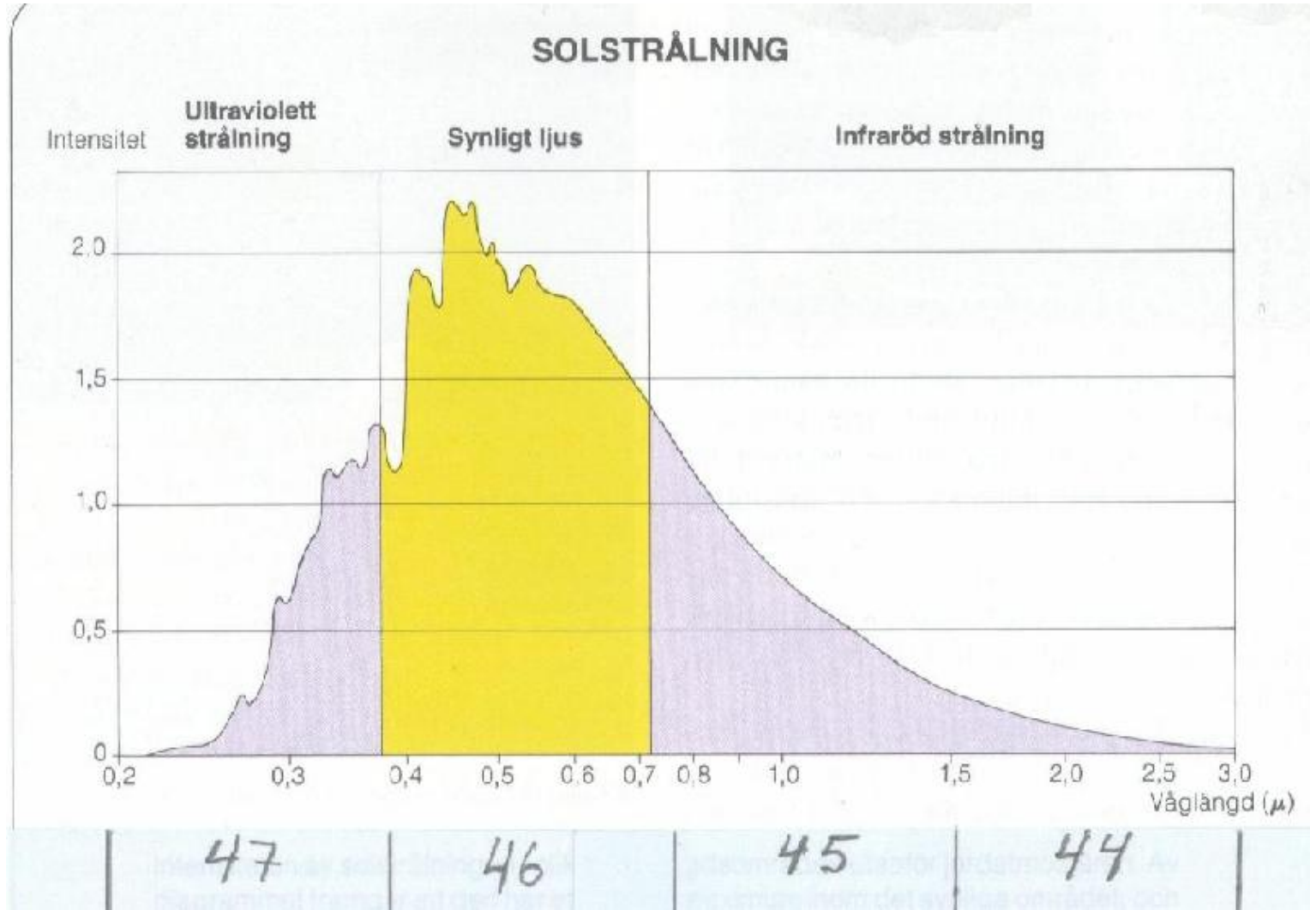
Octave No.	Frequency (Hz)	Wavelength (m)	Energy (eV)
0.000000e+000	1.100000e+001	2.7253860e+007	4.5492362e-014
1.000000e+000	2.200000e+001	1.3626930e+007	9.0984723e-014
2.000000e+000	4.400000e+001	6.8134650e+006	1.8196945e-013
3.000000e+000	8.800000e+001	3.4067325e+006	3.6393889e-013
4.000000e+000	1.760000e+002	1.7033662e+006	7.2787779e-013
5.000000e+000	3.520000e+002	8.5168312e+005	1.4557556e-012
6.000000e+000	7.040000e+002	4.2584156e+005	2.9115111e-012
7.000000e+000	1.408000e+003	2.1292078e+005	5.8230223e-012
8.000000e+000	2.816000e+003	1.0646039e+005	1.1646045e-011
9.000000e+000	5.632000e+003	5.3230195e+004	2.3292089e-011
1.000000e+001	1.126400e+004	2.6615097e+004	4.6584178e-011
1.100000e+001	2.252800e+004	1.3307549e+004	9.3168357e-011
1.200000e+001	4.505600e+004	6.6537744e+003	1.8633671e-010
1.300000e+001	9.011200e+004	3.3268872e+003	3.7267343e-010
1.400000e+001	1.802240e+005	1.6634436e+003	7.4534685e-010
1.500000e+001	3.604480e+005	8.3172180e+002	1.4906937e-009
1.600000e+001	7.208960e+005	4.1586090e+002	2.9813874e-009
1.700000e+001	1.441792e+006	2.0793045e+002	5.9627748e-009
1.800000e+001	2.883584e+006	1.0396522e+002	1.1925550e-008
1.900000e+001	5.767168e+006	5.1982612e+001	2.3851099e-008
2.000000e+001	1.1534336e+007	2.5991306e+001	4.7702199e-008
2.100000e+001	2.3068672e+007	1.2995653e+001	9.5404397e-008
2.200000e+001	4.6137344e+007	6.4978265e+000	1.9080879e-007
2.300000e+001	9.2274688e+007	3.2489133e+000	3.8161759e-007
2.400000e+001	1.8454938e+008	1.6244566e+000	7.6323518e-007
2.500000e+001	3.6909875e+008	8.1222832e-001	1.5264704e-006
2.600000e+001	7.3819750e+008	4.0611416e-001	3.0529407e-006
2.700000e+001	1.4763950e+009	2.0305708e-001	6.1058814e-006
2.800000e+001	2.9527900e+009	1.0152854e-001	1.2211763e-005
2.900000e+001	5.9055800e+009	5.0764270e-002	2.4423526e-005
3.000000e+001	1.1811160e+010	2.5382135e-002	4.8847051e-005

3.1000000e+001	2.3622320e+010	1.2691067e-002	9.7694103e-005
3.2000000e+001	4.7244640e+010	6.3455337e-003	1.9538821e-004
3.3000000e+001	9.4489281e+010	3.1727669e-003	3.9077641e-004
3.4000000e+001	1.8897856e+011	1.5863834e-003	7.8155282e-004
3.5000000e+001	3.7795712e+011	7.9319172e-004	1.5631056e-003
3.6000000e+001	7.5591424e+011	3.9659586e-004	3.1262113e-003
3.7000000e+001	1.5118285e+012	1.9829793e-004	6.2524226e-003
3.8000000e+001	3.0236570e+012	9.9148964e-005	1.2504845e-002
3.9000000e+001	6.0473140e+012	4.9574482e-005	2.5009690e-002
4.0000000e+001	1.2094628e+013	2.4787241e-005	5.0019381e-002
4.1000000e+001	2.4189256e+013	1.2393621e-005	1.0003876e-001
4.2000000e+001	4.8378512e+013	6.1968103e-006	2.0007752e-001
4.3000000e+001	9.6757023e+013	3.0984051e-006	4.0015504e-001
4.4000000e+001	1.9351405e+014	1.5492026e-006	8.0031009e-001
4.5000000e+001	3.8702809e+014	7.7460128e-007	1.6006202e+000
4.6000000e+001	7.7405619e+014	3.8730064e-007	3.2012404e+000
4.7000000e+001	1.5481124e+015	1.9365032e-007	6.4024807e+000
4.8000000e+001	3.0962247e+015	9.6825161e-008	1.2804961e+001
4.9000000e+001	6.1924495e+015	4.8412580e-008	2.5609923e+001
5.0000000e+001	1.2384899e+016	2.4206290e-008	5.1219846e+001
5.1000000e+001	2.4769798e+016	1.2103145e-008	1.0243969e+002
5.2000000e+001	4.9539596e+016	6.0515725e-009	2.0487938e+002
5.3000000e+001	9.9079192e+016	3.0257863e-009	4.0975877e+002
5.4000000e+001	1.9815838e+017	1.5128931e-009	8.1951753e+002
5.5000000e+001	3.9631677e+017	7.5644657e-010	1.6390351e+003
5.6000000e+001	7.9263353e+017	3.7822328e-010	3.2780701e+003
5.7000000e+001	1.5852671e+018	1.8911164e-010	6.5561403e+003
5.8000000e+001	3.1705341e+018	9.4555821e-011	1.3112281e+004
5.9000000e+001	6.3410683e+018	4.7277910e-011	2.6224561e+004
6.0000000e+001	1.2682137e+019	2.3638955e-011	5.2449122e+004
6.1000000e+001	2.5364273e+019	1.1819478e-011	1.0489824e+005
6.2000000e+001	5.0728546e+019	5.9097388e-012	2.0979649e+005
6.3000000e+001	1.0145709e+020	2.9548694e-012	4.1959298e+005
6.4000000e+001	2.0291418e+020	1.4774347e-012	8.3918595e+005
6.5000000e+001	4.0582837e+020	7.3871735e-013	1.6783719e+006
6.6000000e+001	8.1165674e+020	3.6935868e-013	3.3567438e+006
6.7000000e+001	1.6233135e+021	1.8467934e-013	6.7134876e+006
6.8000000e+001	3.2466270e+021	9.2339669e-014	1.3426975e+007
6.9000000e+001	6.4932539e+021	4.6169834e-014	2.6853950e+007
7.0000000e+001	1.2986508e+022	2.3084917e-014	5.3707901e+007
7.1000000e+001	2.5973016e+022	1.1542459e-014	1.0741580e+008
7.2000000e+001	5.1946031e+022	5.7712293e-015	2.1483160e+008
7.3000000e+001	1.0389206e+023	2.8856147e-015	4.2966321e+008
7.4000000e+001	2.0778413e+023	1.4428073e-015	8.5932642e+008
7.5000000e+001	4.1556825e+023	7.2140366e-016	1.7186528e+009
7.6000000e+001	8.3113650e+023	3.6070183e-016	3.4373057e+009
7.7000000e+001	1.6622730e+024	1.8035092e-016	6.8746113e+009
7.8000000e+001	3.3245460e+024	9.0175458e-017	1.3749223e+010
7.9000000e+001	6.6490920e+024	4.5087729e-017	2.7498445e+010
8.0000000e+001	1.3298184e+025	2.2543864e-017	5.4996891e+010
8.1000000e+001	2.6596368e+025	1.1271932e-017	1.0999378e+011
8.2000000e+001	5.3192736e+025	5.6359661e-018	2.1998756e+011
8.3000000e+001	1.0638547e+026	2.8179831e-018	4.3997512e+011
8.4000000e+001	2.1277094e+026	1.4089915e-018	8.7995025e+011
8.5000000e+001	4.2554189e+026	7.0449576e-019	1.7599005e+012
8.6000000e+001	8.5108378e+026	3.5224788e-019	3.5198010e+012
8.7000000e+001	1.7021676e+027	1.7612394e-019	7.0396020e+012
8.8000000e+001	3.4043351e+027	8.8061971e-020	1.4079204e+013
8.9000000e+001	6.8086702e+027	4.4030985e-020	2.8158408e+013
9.0000000e+001	1.3617340e+028	2.2015493e-020	5.6316816e+013
9.1000000e+001	2.7234681e+028	1.1007746e-020	1.1263363e+014
9.2000000e+001	5.4469362e+028	5.5038732e-021	2.2526726e+014
9.3000000e+001	1.0893872e+029	2.7519366e-021	4.5053453e+014
9.4000000e+001	2.1787745e+029	1.3759683e-021	9.0106906e+014

9.5000000e+001 4.3575489e+029 6.8798414e-022 1.8021381e+015
 9.6000000e+001 8.7150979e+029 3.4399207e-022 3.6042762e+015
 9.7000000e+001 1.7430196e+030 1.7199604e-022 7.2085524e+015
 9.8000000e+001 3.4860392e+030 8.5998018e-023 1.4417105e+016
 9.9000000e+001 6.9720783e+030 4.2999009e-023 2.8834210e+016
 1.0000000e+002 1.3944157e+031 2.1499505e-023 5.7668420e+016

Calculated 18.12.1995

You may find below the figures that I have used in the calculation of the octave spectrum. The frequency has been determined, so that the intensity of the four octaves of solar electromagnetic radiation (octaves 44, 45, 46 and 47), measured above the atmosphere of the Earth, fit into the spectral intensity distribution of solar radiation, also taking into consideration the spectrum of visible light, octave No. 46. By these criteria the spectrum is fully defined:



n=0 to 100	Octave number "n"
c=299792458	meter/sec ; speed of light definition
h=6.6260755E-34	joule*sec ; Planck's constant
e0=1.60217733E-19	coulomb ; electron charge
f=11 * 2^n	Hertz ; frequency
lam=c/f	meter ; wavelength

$$eV = f \cdot h / e_0$$

eV or electron Volt ; energy

The Urantia Papers p. 474:

5. WAVE-ENERGY MANIFESTATIONS

In the superuniverse of Orvonton (our local galaxy group; my comment) there are one hundred octaves of wave energy. Of these one hundred groups of energy manifestations, sixty-four are wholly or partially recognized on Urantia. The sun's rays constitute four octaves in the superuniverse scale, the visible rays embracing a single octave, number forty-six in this series. The ultraviolet group comes next, while ten octaves up are the X rays, followed by the gamma rays of radium. Thirty-two octaves above the visible light of the sun are the outer-space energy rays so frequently commingled with their associated highly energized minute particles of matter. Next downward from visible sunlight appear the infrared rays, and thirty octaves below are the radio transmission group.