The Eugene global horizontal spectral irradiance data are generated by an EKO MS 700 spectroradiometer. The data files consist of short time interval – usually 1 minute – spectral and broadband data in month blocks. The file is a comma separated file (.csv) that consists of eight header rows that provide the station name and location and the year and month of the data (see Table 1). Further information on the header columns is shown in Tables 2 and 3. Row 9 starts the one-minute data section of the file and identifies what is in each data column. Rows 7 and 8 in the header are left blank and can be used for future expansion of the header or for comments about specific columns in the file. The document containing a comprehensive description of the spectral file structure can be downloaded by clicking here.

Table 1: Station location and time information

Station_Location	Eugene_Oregon_USA
Latitude_(+N)	44.04678
Longitude_(+E)	-123.074
Altitude_(m)	120
TimeZone_(+E)	-8
Year//Month	2016//02

Header columns 3 to 6 are blank to provide spacing needed information provided in the one-minute data section of the file. The next columns contain information on the broadband and meteorological measurements that are included in the data file to facilitate analysis. The header for the broadband data contained in the spectral files is shown in Table 2. The spectral data are then given for each wavelength in the dataset (see Table 3).

Table 2: Broadband data header

Type_of_Measurement	GHI	DNI	DHI	Temperature	Air_Pressure	Wind_Speed	Wind_Direction	RH
Instrument	CMP22	CHP1	Schenk	Campbell(HMP45C)	Campbell(CS105)	Campbell(03002_Wind_Sentry)	Campbell(03002_Wind_Sentry)	-
Responsivity(uV/W/m^2)	8.9179	7.8101	14.9111	-	-	-	-	-
Uncertainty(U95%)	0.6	0.73	1.69	1	0.1	2	2	2
Units	W/m^2	W/m^2	W/m^2	Degree C	mBar	m/s	Degrees	%

The next columns contain the spectral data. For the EKO MS 700 there are 219 spectral data columns covering the spectrum from 335.4 nm to 1059 nm for an average of 3.3 nm difference between columns. The wavelengths are those specified by the instrument. The accuracy of the wavelength measurement is ± 0.3 nm and the optical resolution (full width at half max) of each bin is 10 nm. A sample of the first two spectral columns are given in Table 3.

Table 3: Column Header for the spectral data

-	GHI_Spectral	GHI_Spectral
Wavelength(nm)	335.4	338.7
Calibration_Factor((W/m^2/nm)/counts)	NA	NA
Uncertainty(U95%)	5.98	6.11
W/m^2/nm	W/m^2/nm	W/m^2/nm

Section 2 – Data section

Row nine contains information on the data in the columns below. The next 40,000 to 48,000 rows, depending on the number of days in the month, contain the spectral data and other useful information. The first 7 columns of the data section and the information in the first few rows is shown in Table 4.

Table 4: First 7 columns of the data sections

Year.Fractionofyear	DOY.Fractionofday	YYYY-MM-DD--hh:mm	SZA	AZM	ETR (W/m^2)	ETRn (W/m^2)
2016.08470135	32.00069444	2016-02-01--00:01	152.65	346.77	0	0
2016.08470325	32.00138889	2016-02-01--00:02	152.69	347.29	0	0
2016.08470515	32.00208333	2016-02-01--00:03	152.73	347.8	0	0
2016.08470704	32.00277778	2016-02-01--00:04	152.77	348.31	0	0

The broadband data starts in column 8 and the spectral data starts in column 16. The header in row 9 for the data second starting in column 16 is a repeat of the information contained in row 2 for the file. Rows 10 and down contain the time stamps, auxiliary information, broadband data, and spectral data. At the end of each row is room for appropriate comments.