

Useful resources for H Line Radio Astronomy.

EMECalc

The very useful software written by the late Doug VK3UM with many useful features for evaluating the performance of EME (and RA) system receivers. <https://www.vk5dj.com/doug.html>

Radio Eyes software

<http://www.radiosky.com/radioeyesishere.html>

Doppler Equation

$$V=(300/Fo) \times (Fo-Fr) \times 10^3$$

V = km/S Topocentric Velocity

Fo = observed Frequency

Fr = Rest Frequency (1420.405MHz... or if you prefer 1,420,405,751.7667Hz)

VLSR calculator.

Enter the coordinates of your observation along with date and time, your latitude and longitude, this calculates the velocity correction from Topocentric velocity to VLSR.

<https://sites.google.com/view/hawkrao/hawkrao-calculators/vlsr-calculator>

Formula to calculate Antenna Temperature.

$$T_a = (10^{(Y/10)} \times T_{sys}) - T_{sys}$$

Noise Power Formula:

$$P_n = 10 \log_{10} \left(\frac{k \cdot B \cdot T}{1 \text{ mW}} \right)$$

Where

T = Temperature in Kelvin

B = Bandwidth in Hz

k = Boltzmann's constant, $1.38064852 \times 10^{-23} \text{ m}^2 \text{ kg s}^{-2} \text{ K}^{-1}$

University of Bonn H Line (LAB) Survey.

Enter the coordinates of your observation along with the beam width of your antenna and it can provide a plot as you would expect to see it. You can download the data as a text file, put in a spreadsheet and overlay on your own results for calibration purposes. <https://www.astro.uni-bonn.de/hisurvey/profile/>

JJ F1EHN

Video of an H Line scan of the Galactic plane by Jean Jaques MAINTOUX (F1EHN)

<https://www.youtube.com/watch?v=HGwkZY4E64k>, a more modern receiving setup than mine see:-

https://f1ehn.pagesperso-orange.fr/pages_radioastro/Images_Docs/rec_21cm_V2013_schema.pdf

And his tracking system widely used on amateur EME and Radio Astronomy antennae.

https://f1ehn.pagesperso-orange.fr/fr/f_emesystem.htm

Spectravue

<https://en.freedownloadmanager.org/Windows-PC/SpectraVue-FREE.html>

continuum mode can be useful with Fun Cube Dongle