I be happy to explain! First, let me assure you that even a retired HS math teacher can recognize a cyclical, and therefore invalid, argument. But I can see how you may have that impression from the cross referencing to various articles. I will outline the logic to the argument below.

The Mathematical Identity: For any integrable function $E(t)$, $\eta = \int_0^{\eta/E_{av}} E(u)du$

where $\eta = \int_0^{\tau} E(u)du$ and $E_{av} = \frac{\eta}{\tau}$

The Physical Assumptions:

a) The energy at the 'sensor' can be represented by $E(t) = E_0 e^{\nu t}$ where E_0 is the intensity and ν is the frequency of radiation. *(Note: This will result in Planck's Formula being an exact mathematical identity. If we instead let $E(t)$ be just integrable, we'll get Planck's Formula as 'best possible approximation')*

b) When the 'source' and the 'sensor' are at equilibrium (i.e when the 'average energy at the sensor' equals the 'average energy from the source', and so $E_{av} = kT$) the 'accumulation of energy' $\eta = h$.

The Argument:

Using the above assumptions in the Mathematical Identity above, we have $h = \int_0^{h/kT} E_0 e^{\nu u} du$ and from this we derive Planck's Formula: $E_0 = \frac{h\nu}{e^{h\nu/kT} - 1}$