FFT Normalisation

$$\sum_{i=0}^{N-1} V_i^2 = \frac{1}{N} \sum_{i=0}^{N-1} |H_i|^2$$ Parseval

$$y_i = \frac{\Delta t}{N \Delta f} |H_i|^2$$ Chosen power estimator

$$\Delta t \sum_{i=0}^{N-1} V_i^2 = \Delta f \sum_{i=0}^{N-1} y_i = \frac{\Delta t}{N} \sum_{i=0}^{N-1} |H_i|^2$$

Y_i is the power per frequency in a frequency bin

$$A_i = \frac{|H_i|}{\Delta f}$$

Chosen Amplitude estimator (per frequency bin)

$$A_i = \frac{2|H_i|}{\Delta f}$$

Actually use twice this as FFTW will return 2N+1 frequency bins

$$P_i = 2\left(\frac{\Delta f A_i}{2}\right)^2 \frac{\Delta t}{N\Delta f} = \frac{\Delta t}{N\Delta f} 2|H_i|^2$$

A_i is what is returned by
        AraJpdWaveformTools::getFFTAmplitude()
P_i is what is used by
        AraJpdFilter::addEventToAveragePower()