For an ideal survey defined by a periodic cube of side length L, the KL modes are simply (real and imaginary parts of) Fourier modes, $\psi_i \sim e^{i\boldsymbol{k}\cdot\boldsymbol{x}}$. The pixel values y_i are therefore just the Fourier coefficients of the density field, $y_i \sim \delta_{\boldsymbol{k}}$, and the band power estimates are just averages over spherical k-shells,

$$p_m \sim \frac{1}{\mathcal{N}_m} \sum_{\boldsymbol{k}\in S_m} |\delta_{\boldsymbol{k}}|^2 \,. \tag{1}$$