The second Renyi entropy of a state ρ is

$$S_2(\rho) = -\ln \mathrm{tr}[\rho^2] = -\ln \mathrm{tr}\left[\left(\sum_u W_u(\rho) A_u\right)^2\right] = -\ln\left(d^n \sum_u W_u(\rho)^2\right) \quad (1)$$

$$= -n \ln d - \ln \sum_u W_u(\rho)^2 \quad (2)$$

Jensen's inequality for $f(x) = x^2$ gives us:

$$\left(\sum_u |W_u(\rho)|\right)^2 \leq \sum_u W_u(\rho)^2 \quad (3)$$

Since $\ln x$ is an increasing function, this means that we can find a bound on the mana

$$\mathcal{M}(\rho) = \ln \sum_u |W_u(\rho)| \quad (4)$$

like so:

$$n \ln d - S_2(\rho) = \ln \sum_u W_u(\rho)^2 \geq \ln\left(\mathcal{M}(\rho)^2\right) = 2 \ln \mathcal{M}(\rho) \quad (5)$$

Which gives:

$$\mathcal{M}(\rho) \leq \frac{1}{2}\left(n \ln d - S_2(\rho)\right) \leq \frac{n}{2} \ln d \quad (6)$$

Where we also used the fact that $S_2(\rho) < 0$.