$$\hat{p}(w|d) = \frac{tf_{w,d} + \mu \frac{cf_w}{\sum_w cf_w}}{|d| + \mu}$$

$$\log p(q|d) = \sum_{w \in q} \log \frac{tf_{w,d} + \mu \frac{cf_w}{\sum_w cf_w}}{|d| + \mu}$$