$$p(\boldsymbol{\beta}, w \mid \mathbf{y}) \propto \underbrace{w^{p/2} \exp\left(-\frac{w}{2}\left(\left(\boldsymbol{\beta} - \boldsymbol{\mu}^*\right)^\top C^\top C \left(\boldsymbol{\beta} - \boldsymbol{\mu}^*\right)\right)\right)}_{\mathcal{N}\left(\boldsymbol{\mu}^*, w^{-1}\left(C^\top C\right)^{-1}\right)}$$

$$\underbrace{w^{(n+d)/2-1} \exp\left(-\frac{w}{2}\left(\mathbf{y}^\top \Lambda \mathbf{y} + m^\top K m + \eta - \boldsymbol{\mu}^{*\top} C^\top C \boldsymbol{\mu}^*\right)\right)}_{\Gamma\left((n+d)/2, \left(\mathbf{y}^\top \Lambda \mathbf{y} + m^\top K m + \eta - \boldsymbol{\mu}^{*\top} C^\top C \boldsymbol{\mu}^*\right)/2\right)}$$

$$p(\boldsymbol{\beta} \mid \mathbf{y}) \propto \Gamma\left(\frac{n+d}{2}, \frac{\mathbf{y}^\top \Lambda \mathbf{y} + m^\top K m + \eta - \boldsymbol{\mu}^{*\top} \kappa^* \boldsymbol{\mu}^*}{2}\right)$$