$$\boldsymbol{z} = \boldsymbol{f}_{\boldsymbol{y},\boldsymbol{\phi}(\hat{\mathbf{x}},\hat{\mathbf{y}})}(\boldsymbol{x}),\ \boldsymbol{x} \sim p_{\boldsymbol{\phi}(\hat{\mathbf{x}},\hat{\mathbf{y}})}(\boldsymbol{x}|\boldsymbol{y})$$