$$\langle e^{\int d\lambda (\xi_{\lambda} \hat{A}_{\lambda} + \eta_{\lambda} \hat{A}_{\lambda}^{\dagger})} \rangle_{c} = e^{-\int d\lambda \frac{\xi_{\lambda} \eta_{\lambda}}{2} \coth \frac{\beta \hbar \omega_{\lambda}}{2}}.$$