$$\begin{array}{lll} \varphi & \varphi &= |\uparrow,\downarrow\rangle = \hat{c}_{1,\uparrow}^{\dagger}\hat{c}_{2,\downarrow}^{\dagger}|0\rangle \\ \\ \varphi & \varphi &= |\downarrow,\uparrow\rangle = \hat{c}_{1,\downarrow}^{\dagger}\hat{c}_{2,\uparrow}^{\dagger}|0\rangle \\ \\ \varphi & \varphi &= |\uparrow,\uparrow\rangle = \hat{c}_{1,\uparrow}^{\dagger}\hat{c}_{2,\uparrow}^{\dagger}|0\rangle \\ \\ \varphi & \varphi &= |\downarrow,\downarrow\rangle = \hat{c}_{1}^{\dagger}\hat{c}_{2,\uparrow}^{\dagger}|0\rangle \end{array}$$