Lemma. Consider $\mathbf{f}, \mathbf{g} \in \mathrm{Hom}_{\mathbf{DP}}(\mathbf{C} \times \mathbf{A}; \mathbf{C} \times \mathbf{B})$. One has

$$\mathrm{Tr}^{\mathbf{C}}_{\mathbf{A},\mathbf{B}}(\mathbf{f} \vee \mathbf{g}) = \mathrm{Tr}^{\mathbf{C}}_{\mathbf{A},\mathbf{B}}(\mathbf{f}) \vee \mathrm{Tr}^{\mathbf{C}}_{\mathbf{A},\mathbf{B}}(\mathbf{g})$$