Figure S3 | Parity diagnostics for complex-domain fitting across classical and quantum branches. (a) Parity plot for the real component, comparing $\Re(Z_{fit})$ against $\Re(Z_{data})$ across all measured frequencies for the classical baseline fit, the continuous VQE/VQA solution, and the discrete QAOA-derived solution. (b) Corresponding parity plot for the imaginary component using $-\Im(Z)$, comparing $-\Im(Z_{fit})$ versus $-\Im(Z_{data})$. The solid diagonal line indicates perfect agreement. The classical and VQE/VQA results track the diagonal closely, confirming that the fitted circuit reproduces both components consistently in the complex domain. The QAOA parity trend illustrates how discretization and surrogate-based optimization impact pointwise agreement, providing a complementary global diagnostic to the Nyquist/Bode overlays.