$$W(B) = \frac{1}{2} \begin{pmatrix} \left(b_1^1 + b_2^1 + b_1^2 + b_2^2\right) & \left(b_1^1 + b_2^1 - b_1^2 - b_2^2\right) \\ \left(b_1^1 - b_2^1 + b_1^2 - b_2^2\right) & \left(b_1^1 - b_2^1 - b_1^2 + b_2^2\right) \end{pmatrix}. \tag{1}$$