$$y^* F_{22} P_{22} y + y^* P_{22} F_{22}^* y + y^* G_2 G_2^T y + y^* L_2 L_2^T y = 0,$$
$$j\omega y^* P_{22} y - j\omega y^* P_{22} y + y^* G_2 G_2^T y + y^* L_2 L_2^T y = 0.$$