$$
\begin{aligned}
\Psi_{224} &= C_1\left(|22uu\rangle - i\,|2uu2\rangle - i\,|u22u\rangle - |uu22\rangle\right) \\
&\quad + C_2\left(|2u2u\rangle - i\,|u2u2\rangle\right)
\end{aligned}
$$

$$
C_1 = -\left(\frac{1}{4}\right) - \frac{i}{4}
$$

$$
C_2 = \frac{-i}{2}
$$