$$
\begin{aligned}
\Psi_{137} &= C_1\left(-|0022\rangle + i\,|0220\rangle - i\,|2002\rangle + |2200\rangle\right) \\
&\quad + C_2\left(|02du\rangle - |02ud\rangle + i\,|0du2\rangle - i\,|0ud2\rangle - |20du\rangle + |20ud\rangle - i\,|2du0\rangle + i\,|2ud0\rangle + i\,|d02u\rangle - i\,|d20u\rangle - |du02\rangle + |du20\rangle - i\,|u02d\rangle + i\,|u20d\rangle + |ud02\rangle - |ud20\rangle\right)
\end{aligned}
$$

$$
C_1 = \frac{\frac{-i}{8}\left(U + \sqrt{16\,t^2 + U^2}\right)}{t}
$$

$$
C_2 = \frac{1}{4}
$$