$$
\begin{aligned}
\Psi_{141} &= C_1 \left(|0d2u\rangle + |0u2d\rangle + |2d0u\rangle + |2u0d\rangle + i\,|d0u2\rangle + i\,|d2u0\rangle + i\,|u0d2\rangle + i\,|u2d0\rangle\right) \\
&\quad + C_2 \left(-|02du\rangle - |02ud\rangle + i\,|0du2\rangle + i\,|0ud2\rangle + |20du\rangle + |20ud\rangle - i\,|2du0\rangle - i\,|2ud0\rangle - i\,|d02u\rangle + i\,|d20u\rangle + |du02\rangle - |du20\rangle - i\,|u02d\rangle + i\,|u20d\rangle + |ud02\rangle - |ud20\rangle\right)
\end{aligned}
$$

$$
C_1 = \frac{-\left(\frac{1}{4}\right) - \frac{i}{4}}{\sqrt{2}}
$$

$$
C_2 = \frac{-1}{4\sqrt{2}}
$$