$$
\begin{aligned}
\Psi_{46} &= C_1\left(-i\,|0duu\rangle + |duu0\rangle - |u0du\rangle + i\,|uu0d\rangle\right) \\
&\quad + C_2\left(-|0uud\rangle + i\,|d0uu\rangle + |ud0u\rangle - i\,|uud0\rangle\right) \\
&\quad + C_3\left(-i\,|0udu\rangle + i\,|du0u\rangle - |u0ud\rangle + |udu0\rangle\right) \\
&\quad + C_4\left(i\,|002u\rangle - |02u0\rangle - i\,|2u00\rangle + |u002\rangle\right) \\
&\quad + C_5\left(i\,|020u\rangle - i\,|0u02\rangle - |20u0\rangle + |u020\rangle\right) \\
&\quad + C_6\left(|00u2\rangle + i\,|0u20\rangle - i\,|200u\rangle - |u200\rangle\right)
\end{aligned}
$$

$$
C_1 = \frac{\frac{i}{3}\left(-2\,t^2\left(-2\,U+\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)+\sqrt{64\,t^4+3\,t^2\,U^2}\left(U+\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)\right)}{\sqrt{2}\,t\left(8\,t^2+i\,t\,U+\sqrt{64\,t^4+3\,t^2\,U^2}-2\,i\,t\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$

$$
C_2 = \frac{48\,i\,t^3-\sqrt{64\,t^4+3\,t^2\,U^2}\left(U+\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)+2\,t^2\left(U+4\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)+3\,i\,t\left(U^2+2\sqrt{64\,t^4+3\,t^2\,U^2}+U\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}{6\sqrt{2}\,t\left(8\,t^2+i\,t\,U+\sqrt{64\,t^4+3\,t^2\,U^2}-2\,i\,t\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$

$$
C_3 = \frac{48\,t^3-i\sqrt{64\,t^4+3\,t^2\,U^2}\left(U+\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)-2\,i\,t^2\left(5\,U+2\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)+3\,t\left(U^2+2\sqrt{64\,t^4+3\,t^2\,U^2}+U\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}{6\sqrt{2}\,t\left(8\,t^2+i\,t\,U+\sqrt{64\,t^4+3\,t^2\,U^2}-2\,i\,t\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$

$$
C_4 = \frac{8\,t^2+i\,t\,U+\sqrt{64\,t^4+3\,t^2\,U^2}}{\sqrt{2}\left(8\,i\,t^2-t\,U+i\sqrt{64\,t^4+3\,t^2\,U^2}+2\,t\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$

$$
C_5 = \frac{8\,t^2+\sqrt{64\,t^4+3\,t^2\,U^2}+i\,t\left(U+2\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}{\sqrt{2}\left(8\,i\,t^2-t\,U+i\sqrt{64\,t^4+3\,t^2\,U^2}+2\,t\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}\right)}
$$

$$
C_6 = -\left(\frac{\sqrt{2}\,t\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}}{8\,t^2+i\,t\,U+\sqrt{64\,t^4+3\,t^2\,U^2}-2\,i\,t\sqrt{32\,t^2+U^2+4\sqrt{64\,t^4+3\,t^2\,U^2}}}\right)
$$