$$
\begin{aligned}
\Psi_{54} &= C_1\left(|0uud\rangle + |d0uu\rangle + |ud0u\rangle + |uud0\rangle\right) \\
&\quad + C_2\left(|0udu\rangle + |du0u\rangle + |u0ud\rangle + |udu0\rangle\right) \\
&\quad + C_3\left(|0duu\rangle + |duu0\rangle + |u0du\rangle + |uu0d\rangle\right) \\
&\quad + C_4\left(|002u\rangle + |02u0\rangle + |2u00\rangle + |u002\rangle\right) \\
&\quad + C_5\left(|00u2\rangle + |0u20\rangle + |200u\rangle + |u200\rangle\right) \\
&\quad + C_6\left(|020u\rangle + |0u02\rangle + |20u0\rangle + |u020\rangle\right)
\end{aligned}
$$

$$
C_1 = \frac{\left(-3\,i+\sqrt{3}\right)\,\left(2\,t+U+\sqrt{16\,t^2+4\,t\,U+U^2}\right)}{-36\,t+12\,i\,\sqrt{3}\,t}
$$

$$
C_2 = \frac{\frac{-i}{12}\,\left(2\,t+U+\sqrt{16\,t^2+4\,t\,U+U^2}\right)}{t}
$$

$$
C_3 = \frac{2\,t+U+\sqrt{16\,t^2+4\,t\,U+U^2}}{-6\,i\,t+6\,\sqrt{3}\,t}
$$

$$
C_4 = \frac{3\,i+\sqrt{3}}{12}
$$

$$
C_5 = \frac{-3\,i+\sqrt{3}}{12}
$$

$$
C_6 = \frac{1}{2\,\sqrt{3}}
$$