$$
\begin{aligned}
&C_{qu}^{(1)\,i1_i2_i3_i4_} \to -\frac{1}{6}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4} + \hbar\,\Big(\frac{1}{1296}\,\frac{1}{m_\Phi^{2}}\,\big(27\,c_\gamma^2\,\overline{y_d}^{pr}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(-1+s_\gamma^2) - \\
&\quad c_\gamma^2\,(27\,\overline{y_d}^{i2p}\,\overline{y_u}^{ri3}\,(12\,s_\gamma^2\,y_d^{i1p}\,y_u^{ri4} - y_d^{rp}\,y_u^{i1i4}\,(-1+s_\gamma^2)) + \\
&\qquad 81\,\overline{y_u}^{ri3}\,\overline{y_u}^{i2p}\,(12\,s_\gamma^2\,y_u^{ri4}\,y_u^{i1p} + y_u^{rp}\,y_u^{i1i4}\,(1+c_\gamma^2)) + 3\,\overline{y_u}^{i2i3} \\
&\qquad (y_u^{i1i4}\,(17\,g_1^2 + 27\,g_2^2 + 96\,g_3^2) + 27\,\overline{y_u}^{pr}\,(y_u^{pi4}\,y_u^{i1r}\,(1+c_\gamma^2) - 8\,s_\gamma^2\,y_u^{pr}\,y_u^{i1i4})) + \\
&\qquad 14\,g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,\delta_{i1i2}) + 4\,g_1^2\,(5\,s_\gamma^2\,\overline{y_d}^{i2p}\,y_d^{i1p} - 13\,c_\gamma^2\,\overline{y_u}^{i2p}\,y_u^{i1p})\,\delta_{i3i4}\big) - \\
&\frac{1}{12}\sum_p c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_{2\gamma}\,c_\gamma - 2\,s_{2\gamma}\,s_\gamma)\,LF_{1,0}[m_{\tilde{d}}^{p}] + \\
&\frac{4}{243}\sum_p g_1^4\,LF_{3,0}[m_{\tilde{d}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{5}{162}\sum_p g_1^4\,LF_{4,-1}[m_{\tilde{d}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{16}{1215}\sum_p g_1^4\,LF_{5,-2}[m_{\tilde{d}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{1}{2}\,s_\gamma\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_d}^{pr}\,y_d^{pr}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(s_{2\gamma} + s_\gamma\,c_\gamma)\,LF_{1,0}[m_{\tilde{d}}^{r}] - \\
&\frac{1}{12}\sum_p c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_{2\gamma}\,c_\gamma - 2\,s_{2\gamma}\,s_\gamma)\,LF_{1,0}[m_{\tilde{e}}^{p}] + \\
&\frac{4}{81}\sum_p g_1^4\,LF_{3,0}[m_{\tilde{e}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{5}{54}\sum_p g_1^4\,LF_{4,-1}[m_{\tilde{e}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{16}{405}\sum_p g_1^4\,LF_{5,-2}[m_{\tilde{e}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{1}{6}\,s_\gamma\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_e}^{pr}\,y_e^{pr}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(s_{2\gamma} + s_\gamma\,c_\gamma)\,LF_{1,0}[m_{\tilde{e}}^{r}] + \\
&\frac{1}{12}\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,\Big(-2\,s_\gamma\,\overline{y_e}^{pr}\,y_e^{pr}\,(s_{2\gamma} + s_\gamma\,c_\gamma) + \sum_p g_1^2\,(c_{2\gamma}\,c_\gamma - 2\,s_{2\gamma}\,s_\gamma)\Big)\,LF_{1,0}[m_{\tilde{l}}^{p}] + \\
&\frac{2}{81}\sum_p g_1^4\,LF_{3,0}[m_{\tilde{l}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{5}{108}\sum_p g_1^4\,LF_{4,-1}[m_{\tilde{l}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{8}{405}\sum_p g_1^4\,LF_{5,-2}[m_{\tilde{l}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{1}{12}\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4} \\
&\quad\Big(6\,s_\gamma\,\overline{y_d}^{pr}\,y_d^{pr}\,(s_{2\gamma} + s_\gamma\,c_\gamma) + 6\,\overline{y_u}^{pr}\,y_u^{pr}\,(c_\gamma^3 - s_{2\gamma}\,s_\gamma) + \sum_p g_1^2\,(c_{2\gamma}\,c_\gamma - 2\,s_{2\gamma}\,s_\gamma)\Big) \\
&\quad LF_{1,0}[m_{\tilde{q}}^{p}] + \frac{2}{243}\sum_p g_1^4\,LF_{3,0}[m_{\tilde{q}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{5}{324}\sum_p g_1^4\,LF_{4,-1}[m_{\tilde{q}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{8}{1215}\sum_p g_1^4\,LF_{5,-2}[m_{\tilde{q}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{6}\sum_p c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_{2\gamma}\,c_\gamma - 2\,s_{2\gamma}\,s_\gamma)\,LF_{1,0}[m_{\tilde{u}}^{p}] + \\
&\frac{16}{243}\sum_p g_1^4\,LF_{3,0}[m_{\tilde{u}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{10}{81}\sum_p g_1^4\,LF_{4,-1}[m_{\tilde{u}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{64}{1215}\sum_p g_1^4\,LF_{5,-2}[m_{\tilde{u}}^{p}]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{1}{2}\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{pr}\,\overline{y_u}^{i2i3}\,y_u^{pr}\,y_u^{i1i4}\,(c_\gamma^3 - s_{2\gamma}\,s_\gamma)\,LF_{1,0}[m_{\tilde{u}}^{r}] + \\
&\frac{1}{24}\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma\,(g_1^2\,(1 - 3\,c_{2\gamma}^2) - 3\,g_2^2\,(-1 + c_{2\gamma}^2)) + 3\,s_{4\gamma}\,s_\gamma\,(g_1^2 + g_2^2)) \\
&\quad LF_{1,0}[m_\Phi] + \frac{1}{24}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,(3\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(-s_\gamma^2\,\overline{y_d}^{pr}\,y_d^{i1r} + c_\gamma^2\,\overline{y_u}^{pr}\,y_u^{i1r}) - \\
&\qquad y_u^{i1i4}\,(2\,\overline{y_u}^{i2i3}\,(g_1^2 + 3\,g_2^2) + 3\,\overline{y_u}^{ri3}\,(s_\gamma^2\,\overline{y_d}^{i2p}\,y_d^{rp} - c_\gamma^2\,\overline{y_u}^{i2p}\,y_u^{rp})))\,LF_{1,1}[m_\Phi] + \\
&\frac{1}{216}\,(18\,s_\gamma^2\,c_\gamma^2\,\overline{y_d}^{pr}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4} + 2\,s_\gamma^2\,\overline{y_d}^{i2p}\,(9\,c_\gamma^2\,\overline{y_u}^{ri3}\,(-6\,y_d^{i1p}\,y_u^{ri4} + y_d^{rp}\,y_u^{i1i4}) + \\
&\qquad 8\,g_1^2\,y_d^{i1p}\,\delta_{i3i4}) + c_\gamma^2\,(9\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(g_1^2 + 3\,g_2^2) - \\
&\qquad 4\,g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,\delta_{i1i2} - 4\,\overline{y_u}^{i2p}\,y_u^{i1p}\,(27\,s_\gamma^2\,\overline{y_u}^{ri3}\,y_u^{ri4} + 8\,g_1^2\,\delta_{i3i4}))) \\
&\quad LF_{1,2}[m_\Phi] + \frac{1}{36}\,(s_\gamma^2\,\overline{y_d}^{i2p}\,y_d^{i1p}\,(9\,c_\gamma^2\,\overline{y_u}^{ri3}\,y_u^{ri4} - 2\,g_1^2\,\delta_{i3i4}) - \\
&\qquad c_\gamma^2\,(g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,\delta_{i1i2} + \overline{y_u}^{i2p}\,y_u^{i1p}\,(9\,c_\gamma^2\,\overline{y_u}^{ri3}\,y_u^{ri4} - 2\,g_1^2\,\delta_{i3i4})))\,LF_{2,1}[m_\Phi] + \\
&\frac{1}{324}\,g_1^2\,(9\,c_\gamma^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,\delta_{i1i2} + 2\,(9\,s_\gamma^2\,\overline{y_d}^{i2p}\,y_d^{i1p} - 9\,c_\gamma^2\,\overline{y_u}^{i2p}\,y_u^{i1p} + 4\,g_1^2\,\delta_{i1i2})\,\delta_{i3i4}) \\
&\quad LF_{3,0}[m_\Phi] - \frac{5}{108}\,g_1^4\,LF_{4,-1}[m_\Phi]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{8}{405}\,g_1^4\,LF_{5,-2}[m_\Phi]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{2}{81}\,g_1^4\,LF_{3,0}[\tilde{\mu}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{1}{27}\,g_1^4\,LF_{4,-1}[\tilde{\mu}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{16}{405}\,g_1^4\,LF_{5,-2}[\tilde{\mu}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{1}{216}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_1,\, m_{\tilde{q}}^{i1}] - \\
&\frac{1}{432}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_1,\, m_{\tilde{q}}^{i1}] + \\
&\frac{1}{216}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_1,\, m_{\tilde{q}}^{i2}] - \\
&\frac{1}{432}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_1,\, m_{\tilde{q}}^{i2}] + \frac{1}{972}\,g_1^4\,LF_{2,1,0}[m_1,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{972}\,g_1^4\,LF_{2,2,-1}[m_1,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{1}{486}\,g_1^4\,LF_{3,1,-1}[m_1,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{972}\,g_1^4\,LF_{4,1,-2}[m_1,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{2}{27}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_1,\, m_{\tilde{u}}^{i3}] - \\
&\frac{1}{27}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_1,\, m_{\tilde{u}}^{i3}] + \\
&\frac{2}{27}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_1,\, m_{\tilde{u}}^{i4}] - \frac{1}{27}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_1,\, m_{\tilde{u}}^{i4}] + \\
&\frac{4}{243}\,g_1^4\,LF_{2,1,0}[m_1,\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{4}{243}\,g_1^4\,LF_{2,2,-1}[m_1,\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{8}{243}\,g_1^4\,LF_{3,1,-1}[m_1,\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{4}{243}\,g_1^4\,LF_{4,1,-2}[m_1,\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{6}\,g_1^2\,\frac{1}{m_\Phi^{4}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma^2 + s_\gamma^2)\,LF_{1,1,-1}[m_1,\, \tilde{\mu}] + \\
&\frac{1}{3}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(-2\,c_\gamma^2 + s_\gamma^2)\,LF_{1,1,0}[m_1,\, \tilde{\mu}] + \\
&\frac{1}{8}\,g_2^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_2,\, m_{\tilde{q}}^{i1}] - \frac{1}{16}\,g_2^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_2,\, m_{\tilde{q}}^{i1}] + \\
&\frac{1}{8}\,g_2^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_2,\, m_{\tilde{q}}^{i2}] - \frac{1}{16}\,g_2^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_2,\, m_{\tilde{q}}^{i2}] + \\
&\frac{1}{36}\,g_1^2\,g_2^2\,LF_{2,1,0}[m_2,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{1}{36}\,g_1^2\,g_2^2\,LF_{2,2,-1}[m_2,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{1}{18}\,g_1^2\,g_2^2\,LF_{3,1,-1}[m_2,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{1}{36}\,g_1^2\,g_2^2\,LF_{4,1,-2}[m_2,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{2}\,g_2^2\,\frac{1}{m_\Phi^{4}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma^2 + s_\gamma^2)\,LF_{1,1,-1}[m_2,\, \tilde{\mu}] + \\
&m_2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_2^2\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(-2\,c_\gamma^2 + s_\gamma^2)\,LF_{1,1,0}[m_2,\, \tilde{\mu}] + \\
&\frac{2}{9}\,g_3^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_3,\, m_{\tilde{q}}^{i1}] - \frac{1}{9}\,g_3^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_3,\, m_{\tilde{q}}^{i1}] + \\
&\frac{2}{9}\,g_3^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_3,\, m_{\tilde{q}}^{i2}] - \frac{1}{9}\,g_3^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_3,\, m_{\tilde{q}}^{i2}] + \\
&\frac{4}{81}\,g_1^2\,g_3^2\,LF_{2,1,0}[m_3,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{4}{81}\,g_1^2\,g_3^2\,LF_{2,2,-1}[m_3,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{8}{81}\,g_1^2\,g_3^2\,LF_{3,1,-1}[m_3,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{4}{81}\,g_1^2\,g_3^2\,LF_{4,1,-2}[m_3,\, m_{\tilde{q}}^{i2}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{2}{9}\,g_3^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_3,\, m_{\tilde{u}}^{i3}] - \frac{1}{9}\,g_3^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_3,\, m_{\tilde{u}}^{i3}] + \\
&\frac{2}{9}\,g_3^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,0}[m_3,\, m_{\tilde{u}}^{i4}] - \frac{1}{9}\,g_3^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,1,-1}[m_3,\, m_{\tilde{u}}^{i4}] + \\
&\frac{4}{81}\,g_1^2\,g_3^2\,LF_{2,1,0}[m_3,\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{4}{81}\,g_1^2\,g_3^2\,LF_{2,2,-1}[m_3,\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{8}{81}\,g_1^2\,g_3^2\,LF_{3,1,-1}[m_3,\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{4}{81}\,g_1^2\,g_3^2\,LF_{4,1,-2}[m_3,\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{12}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_d}^{i2p}\,y_d^{rp}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,LF_{1,1,0}[m_{\tilde{d}}^{p},\, \tilde{\mu}] + \frac{2}{27}\,g_1^2\,\overline{y_d}^{i2p}\,y_d^{i1p}\,LF_{2,1,0}[m_{\tilde{d}}^{p},\, \tilde{\mu}]\,\delta_{i3i4} - \\
&\frac{1}{27}\,g_1^2\,\overline{y_d}^{i2p}\,y_d^{i1p}\,LF_{2,2,-1}[m_{\tilde{d}}^{p},\, \tilde{\mu}]\,\delta_{i3i4} - \frac{1}{27}\,g_1^2\,\overline{y_d}^{i2p}\,y_d^{i1p}\,LF_{3,1,-1}[m_{\tilde{d}}^{p},\, \tilde{\mu}]\,\delta_{i3i4} + \\
&\frac{1}{2}\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(\tilde{\mu}\,\overline{y_d}^{pr}\,(a_d^{pr}\,(-2\,s_\gamma\,c_\gamma^2 + s_\gamma^3) - \tilde{\mu}\,c_\gamma\,y_d^{pr}\,(c_\gamma^2 - 2\,s_\gamma^2)) + \\
&\qquad s_\gamma\,\overline{a_d}^{pr}\,(-3\,s_\gamma\,c_\gamma\,a_d^{pr} + \tilde{\mu}\,y_d^{pr}\,(-2\,c_\gamma^2 + s_\gamma^2)))\,LF_{1,1,0}[m_{\tilde{d}}^{r},\, m_{\tilde{q}}^{p}] + \\
&\frac{1}{12}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_d}^{pr}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,LF_{1,1,0}[m_{\tilde{d}}^{r},\, \tilde{\mu}] + \frac{1}{6}\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4} \\
&\quad (\tilde{\mu}\,\overline{y_e}^{pr}\,(a_e^{pr}\,(-2\,s_\gamma\,c_\gamma^2 + s_\gamma^3) - \tilde{\mu}\,c_\gamma\,y_e^{pr}\,(c_\gamma^2 - 2\,s_\gamma^2)) + \\
&\qquad s_\gamma\,\overline{a_e}^{pr}\,(-3\,s_\gamma\,c_\gamma\,a_e^{pr} + \tilde{\mu}\,y_e^{pr}\,(-2\,c_\gamma^2 + s_\gamma^2)))\,LF_{1,1,0}[m_{\tilde{e}}^{r},\, m_{\tilde{l}}^{p}] + \frac{1}{6}\,s_\gamma\,c_\gamma\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4} \\
&\quad (\tilde{\mu}\,\overline{y_e}^{pr}\,(a_e^{pr}\,(c_\gamma^2 - s_\gamma^2) - 2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,y_e^{pr}) + \overline{a_e}^{pr}\,(2\,s_\gamma\,c_\gamma\,a_e^{pr} + \tilde{\mu}\,y_e^{pr}\,(c_\gamma^2 - s_\gamma^2))) \\
&\quad LF_{2,1,0}[m_{\tilde{l}}^{p},\, m_{\tilde{e}}^{r}] + \frac{1}{6}\,s_\gamma\,c_\gamma\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(\tilde{\mu}\,\overline{y_e}^{pr}\,(a_e^{pr}\,(-c_\gamma^2 + s_\gamma^2) + 2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,y_e^{pr}) + \\
&\qquad \overline{a_e}^{pr}\,(-2\,s_\gamma\,c_\gamma\,a_e^{pr} + \tilde{\mu}\,y_e^{pr}\,(-c_\gamma^2 + s_\gamma^2)))\,LF_{3,1,-1}[m_{\tilde{l}}^{p},\, m_{\tilde{e}}^{r}] - \\
&\frac{1}{6}\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(-c_\gamma\,\overline{a_e}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_e}^{pr})\,(-c_\gamma\,a_e^{pr} + s_\gamma\,\tilde{\mu}\,y_e^{pr})\,LF_{3,1,0}[m_{\tilde{l}}^{p},\, m_{\tilde{e}}^{r}] + \\
&\frac{1}{2}\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(-c_\gamma\,\overline{a_e}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_e}^{pr})\,(-c_\gamma\,a_e^{pr} + s_\gamma\,\tilde{\mu}\,y_e^{pr})\,LF_{4,1,-1}[m_{\tilde{l}}^{p},\, m_{\tilde{e}}^{r}] - \\
&\frac{1}{3}\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(-c_\gamma\,\overline{a_e}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_e}^{pr})\,(-c_\gamma\,a_e^{pr} + s_\gamma\,\tilde{\mu}\,y_e^{pr})\,LF_{5,1,-2}[m_{\tilde{l}}^{p},\, m_{\tilde{e}}^{r}] + \\
&\frac{1}{2}\,s_\gamma\,c_\gamma\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4} \\
&\quad (\tilde{\mu}\,\overline{y_d}^{pr}\,(a_d^{pr}\,(c_\gamma^2 - s_\gamma^2) - 2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,y_d^{pr}) + \overline{a_d}^{pr}\,(2\,s_\gamma\,c_\gamma\,a_d^{pr} + \tilde{\mu}\,y_d^{pr}\,(c_\gamma^2 - s_\gamma^2))) \\
&\quad LF_{2,1,0}[m_{\tilde{q}}^{p},\, m_{\tilde{d}}^{r}] + \frac{1}{2}\,s_\gamma\,c_\gamma\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(\tilde{\mu}\,\overline{y_d}^{pr}\,(a_d^{pr}\,(-c_\gamma^2 + s_\gamma^2) + 2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,y_d^{pr}) + \\
&\qquad \overline{a_d}^{pr}\,(-2\,s_\gamma\,c_\gamma\,a_d^{pr} + \tilde{\mu}\,y_d^{pr}\,(-c_\gamma^2 + s_\gamma^2)))\,LF_{3,1,-1}[m_{\tilde{q}}^{p},\, m_{\tilde{d}}^{r}] - \\
&\frac{1}{2}\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(-c_\gamma\,\overline{a_d}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,(-c_\gamma\,a_d^{pr} + s_\gamma\,\tilde{\mu}\,y_d^{pr})\,LF_{3,1,0}[m_{\tilde{q}}^{p},\, m_{\tilde{d}}^{r}] + \\
&\frac{3}{2}\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(-c_\gamma\,\overline{a_d}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,(-c_\gamma\,a_d^{pr} + s_\gamma\,\tilde{\mu}\,y_d^{pr})\,LF_{4,1,-1}[m_{\tilde{q}}^{p},\, m_{\tilde{d}}^{r}] - \\
&s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(-c_\gamma\,\overline{a_d}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,(-c_\gamma\,a_d^{pr} + s_\gamma\,\tilde{\mu}\,y_d^{pr})\,LF_{5,1,-2}[m_{\tilde{q}}^{p},\, m_{\tilde{d}}^{r}] + \\
&\frac{1}{2}\,c_\gamma\,\frac{1}{m_\Phi^{4}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(s_\gamma\,\tilde{\mu}\,\overline{y_u}^{pr}\,(a_u^{pr}\,(-2\,c_\gamma^2 + s_\gamma^2) - 3\,s_\gamma\,\tilde{\mu}\,c_\gamma\,y_u^{pr}) + \\
&\qquad \overline{a_u}^{pr}\,(-a_u^{pr}\,(c_\gamma^3 - 2\,c_\gamma\,s_\gamma^2) + s_\gamma\,\tilde{\mu}\,y_u^{pr}\,(-2\,c_\gamma^2 + s_\gamma^2)))\,LF_{1,1,0}[m_{\tilde{q}}^{p},\, m_{\tilde{u}}^{r}] + \\
&\frac{1}{6}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{pr}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,y_u^{i1r}\,LF_{1,1,0}[m_{\tilde{q}}^{p},\, \tilde{\mu}] - \frac{1}{54}\,g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,LF_{2,1,0}[m_{\tilde{q}}^{p},\, \tilde{\mu}]\,\delta_{i1i2} + \\
&\frac{1}{108}\,g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,LF_{2,2,-1}[m_{\tilde{q}}^{p},\, \tilde{\mu}]\,\delta_{i1i2} + \frac{1}{108}\,g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,LF_{3,1,-1}[m_{\tilde{q}}^{p},\, \tilde{\mu}]\,\delta_{i1i2} + \\
&\frac{1}{6}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{ri3}\,\overline{y_u}^{i2p}\,y_u^{rp}\,y_u^{i1i4}\,LF_{1,1,0}[m_{\tilde{q}}^{r},\, \tilde{\mu}] - \frac{1}{486}\,g_1^4\,LF_{2,1,0}[m_{\tilde{q}}^{i2},\, m_1]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{972}\,g_1^4\,LF_{3,1,-1}[m_{\tilde{q}}^{i2},\, m_1]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{1}{18}\,g_1^2\,g_2^2\,LF_{2,1,0}[m_{\tilde{q}}^{i2},\, m_2]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{36}\,g_1^2\,g_2^2\,LF_{3,1,-1}[m_{\tilde{q}}^{i2},\, m_2]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{8}{81}\,g_1^2\,g_3^2\,LF_{2,1,0}[m_{\tilde{q}}^{i2},\, m_3]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{4}{81}\,g_1^2\,g_3^2\,LF_{3,1,-1}[m_{\tilde{q}}^{i2},\, m_3]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{1}{12}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{ri3}\,\overline{y_u}^{i2p}\,y_u^{rp}\,y_u^{i1i4}\,LF_{1,1,0}[m_{\tilde{u}}^{p},\, \tilde{\mu}] - \\
&\frac{4}{27}\,g_1^2\,\overline{y_u}^{i2p}\,y_u^{i1p}\,LF_{2,1,0}[m_{\tilde{u}}^{p},\, \tilde{\mu}]\,\delta_{i3i4} + \frac{2}{27}\,g_1^2\,\overline{y_u}^{i2p}\,y_u^{i1p}\,LF_{2,2,-1}[m_{\tilde{u}}^{p},\, \tilde{\mu}]\,\delta_{i3i4} + \\
&\frac{2}{27}\,g_1^2\,\overline{y_u}^{i2p}\,y_u^{i1p}\,LF_{3,1,-1}[m_{\tilde{u}}^{p},\, \tilde{\mu}]\,\delta_{i3i4} + \frac{1}{2}\,s_\gamma\,c_\gamma\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4} \\
&\quad (\tilde{\mu}\,\overline{y_u}^{pr}\,(a_u^{pr}\,(c_\gamma^2 - s_\gamma^2) + 2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,y_u^{pr}) + \overline{a_u}^{pr}\,(-2\,s_\gamma\,c_\gamma\,a_u^{pr} + \tilde{\mu}\,y_u^{pr}\,(c_\gamma^2 - s_\gamma^2))) \\
&\quad LF_{2,1,0}[m_{\tilde{u}}^{r},\, m_{\tilde{q}}^{p}] + \frac{1}{2}\,s_\gamma\,c_\gamma\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(\tilde{\mu}\,\overline{y_u}^{pr}\,(a_u^{pr}\,(-c_\gamma^2 + s_\gamma^2) - 2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,y_u^{pr}) + \\
&\qquad \overline{a_u}^{pr}\,(2\,s_\gamma\,c_\gamma\,a_u^{pr} + \tilde{\mu}\,y_u^{pr}\,(-c_\gamma^2 + s_\gamma^2)))\,LF_{3,1,-1}[m_{\tilde{u}}^{r},\, m_{\tilde{q}}^{p}] - \\
&\frac{1}{2}\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{pr} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{pr})\,(s_\gamma\,a_u^{pr} - \tilde{\mu}\,c_\gamma\,y_u^{pr})\,LF_{3,1,0}[m_{\tilde{u}}^{r},\, m_{\tilde{q}}^{p}] + \\
&\frac{3}{2}\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{pr} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{pr})\,(s_\gamma\,a_u^{pr} - \tilde{\mu}\,c_\gamma\,y_u^{pr})\,LF_{4,1,-1}[m_{\tilde{u}}^{r},\, m_{\tilde{q}}^{p}] - \\
&s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{pr} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{pr})\,(s_\gamma\,a_u^{pr} - \tilde{\mu}\,c_\gamma\,y_u^{pr})\,LF_{5,1,-2}[m_{\tilde{u}}^{r},\, m_{\tilde{q}}^{p}] + \\
&\frac{1}{12}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{pr}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,y_u^{i1r}\,LF_{1,1,0}[m_{\tilde{u}}^{r},\, \tilde{\mu}] - \\
&\frac{8}{243}\,g_1^4\,LF_{2,1,0}[m_{\tilde{u}}^{i4},\, m_1]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{4}{243}\,g_1^4\,LF_{3,1,-1}[m_{\tilde{u}}^{i4},\, m_1]\,\delta_{i1i2}\,\delta_{i3i4} - \\
&\frac{8}{81}\,g_1^2\,g_3^2\,LF_{2,1,0}[m_{\tilde{u}}^{i4},\, m_3]\,\delta_{i1i2}\,\delta_{i3i4} + \frac{4}{81}\,g_1^2\,g_3^2\,LF_{3,1,-1}[m_{\tilde{u}}^{i4},\, m_3]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{3}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma^2 - s_\gamma^2)\,LF_{2,1,0}[\tilde{\mu},\, m_1] + \\
&\frac{1}{3}\,s_\gamma\,g_1^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(s_\gamma\,m_\Phi^2\,(c_\gamma^2 + s_\gamma^2) + m_1\,\tilde{\mu}\,c_\gamma\,(-c_\gamma^2 + s_\gamma^2))\,LF_{3,1,-1}[\tilde{\mu},\, m_1] + \\
&\frac{1}{3}\,m_1\,\tilde{\mu}\,c_\gamma\,g_1^2\,s_\gamma^3\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{3,1,0}[\tilde{\mu},\, m_1] - \\
&\frac{2}{3}\,g_1^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma^2 + s_\gamma^2)\,LF_{4,1,-2}[\tilde{\mu},\, m_1] - \\
&m_1\,\tilde{\mu}\,c_\gamma\,g_1^2\,s_\gamma^3\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{4,1,-1}[\tilde{\mu},\, m_1] + \frac{1}{3}\,g_1^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma^2 + s_\gamma^2)\,LF_{5,1,-3}[\tilde{\mu},\, m_1] + \\
&\frac{2}{3}\,m_1\,\tilde{\mu}\,c_\gamma\,g_1^2\,s_\gamma^3\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{5,1,-2}[\tilde{\mu},\, m_1] + \\
&m_2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_2^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma^2 - s_\gamma^2)\,LF_{2,1,0}[\tilde{\mu},\, m_2] + \\
&s_\gamma\,g_2^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(s_\gamma\,m_\Phi^2\,(c_\gamma^2 + s_\gamma^2) + m_2\,\tilde{\mu}\,c_\gamma\,(-c_\gamma^2 + s_\gamma^2))\,LF_{3,1,-1}[\tilde{\mu},\, m_2] + \\
&m_2\,\tilde{\mu}\,c_\gamma\,g_2^2\,s_\gamma^3\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{3,1,0}[\tilde{\mu},\, m_2] - 2\,g_2^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma^2 + s_\gamma^2)\,LF_{4,1,-2}[\tilde{\mu},\, m_2] - \\
&3\,m_2\,\tilde{\mu}\,c_\gamma\,g_2^2\,s_\gamma^3\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{4,1,-1}[\tilde{\mu},\, m_2] + \\
&g_2^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,(c_\gamma^2 + s_\gamma^2)\,LF_{5,1,-3}[\tilde{\mu},\, m_2] + 2\,m_2\,\tilde{\mu}\,c_\gamma\,g_2^2\,s_\gamma^3\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{5,1,-2}[\tilde{\mu},\, m_2] - \\
&\frac{1}{24}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_d}^{i2p}\,y_d^{rp}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,LF_{2,1,-1}[\tilde{\mu},\, m_{\tilde{d}}^{p}] - \frac{1}{27}\,g_1^2\,\overline{y_d}^{i2p}\,y_d^{i1p}\,LF_{2,1,0}[\tilde{\mu},\, m_{\tilde{d}}^{p}]\,\delta_{i3i4} - \\
&\frac{5}{54}\,g_1^2\,\overline{y_d}^{i2p}\,y_d^{i1p}\,LF_{3,1,-1}[\tilde{\mu},\, m_{\tilde{d}}^{p}]\,\delta_{i3i4} + \frac{1}{54}\,g_1^2\,\overline{y_d}^{i2p}\,y_d^{i1p}\,LF_{4,1,-2}[\tilde{\mu},\, m_{\tilde{d}}^{p}]\,\delta_{i3i4} - \\
&\frac{1}{24}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_d}^{pr}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,LF_{2,1,-1}[\tilde{\mu},\, m_{\tilde{d}}^{r}] - \\
&\frac{1}{12}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{pr}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,y_u^{i1r}\,LF_{2,1,-1}[\tilde{\mu},\, m_{\tilde{q}}^{p}] + \\
&\frac{1}{108}\,g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,LF_{2,1,0}[\tilde{\mu},\, m_{\tilde{q}}^{p}]\,\delta_{i1i2} - \frac{11}{108}\,g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,LF_{3,1,-1}[\tilde{\mu},\, m_{\tilde{q}}^{p}]\,\delta_{i1i2} + \\
&\frac{1}{27}\,g_1^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\,LF_{4,1,-2}[\tilde{\mu},\, m_{\tilde{q}}^{p}]\,\delta_{i1i2} - \frac{1}{12}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{ri3}\,\overline{y_u}^{i2p}\,y_u^{rp}\,y_u^{i1i4}\,LF_{2,1,-1}[\tilde{\mu},\, m_{\tilde{q}}^{r}] - \\
&\frac{1}{24}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{ri3}\,\overline{y_u}^{i2p}\,y_u^{rp}\,y_u^{i1i4}\,LF_{2,1,-1}[\tilde{\mu},\, m_{\tilde{u}}^{p}] + \frac{2}{27}\,g_1^2\,\overline{y_u}^{i2p}\,y_u^{i1p}\,LF_{2,1,0}[\tilde{\mu},\, m_{\tilde{u}}^{p}]\,\delta_{i3i4} + \\
&\frac{1}{54}\,g_1^2\,\overline{y_u}^{i2p}\,y_u^{i1p}\,LF_{3,1,-1}[\tilde{\mu},\, m_{\tilde{u}}^{p}]\,\delta_{i3i4} + \frac{1}{54}\,g_1^2\,\overline{y_u}^{i2p}\,y_u^{i1p}\,LF_{4,1,-2}[\tilde{\mu},\, m_{\tilde{u}}^{p}]\,\delta_{i3i4} - \\
&\frac{1}{24}\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{pr}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,y_u^{i1r}\,LF_{2,1,-1}[\tilde{\mu},\, m_{\tilde{u}}^{r}] - \\
&\frac{1}{27}\,m_1\,c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,(c_\gamma\,a_u^{i1i4} + s_\gamma\,\tilde{\mu}\,y_u^{i1i4})\,LF_{1,1,1,0}[m_1,\, m_{\tilde{q}}^{i1},\, m_{\tilde{u}}^{i4}] + \\
&\frac{1}{108}\,m_1\,s_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,(s_\gamma\,a_u^{i1i4} - \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{2,2,1,-1}[m_1,\, m_{\tilde{q}}^{i1},\, m_{\tilde{u}}^{i4}] + \\
&\frac{1}{36}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,-1}[m_1,\, m_{\tilde{q}}^{i1},\, \tilde{\mu}] - \\
&\frac{1}{36}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,0}[m_1,\, m_{\tilde{q}}^{i1},\, \tilde{\mu}] - \\
&\frac{1}{27}\,m_1\,c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{2}}\,y_u^{i1i4}\,(c_\gamma\,\overline{a_u}^{i2i3} + s_\gamma\,\tilde{\mu}\,\overline{y_u}^{i2i3})\,LF_{1,1,1,0}[m_1,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i3}] + \\
&\frac{1}{108}\,m_1\,s_\gamma\,g_1^2\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{i2i3} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{2,2,1,-1}[m_1,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i3}] - \\
&\frac{1}{81}\,g_1^4\,LF_{2,1,1,-1}[m_1,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{2}{81}\,g_1^4\,m_1^2\,LF_{2,1,1,0}[m_1,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{36}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,-1}[m_1,\, m_{\tilde{q}}^{i2},\, \tilde{\mu}] - \\
&\frac{1}{36}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,0}[m_1,\, m_{\tilde{q}}^{i2},\, \tilde{\mu}] + \\
&\frac{1}{108}\,m_1\,s_\gamma\,g_1^2\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{i2i3} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{2,2,1,-1}[m_1,\, m_{\tilde{u}}^{i3},\, m_{\tilde{q}}^{i2}] - \\
&\frac{1}{9}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,-1}[m_1,\, m_{\tilde{u}}^{i3},\, \tilde{\mu}] + \\
&\frac{1}{9}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,0}[m_1,\, m_{\tilde{u}}^{i3},\, \tilde{\mu}] + \\
&\frac{1}{108}\,m_1\,s_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,(s_\gamma\,a_u^{i1i4} - \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{2,2,1,-1}[m_1,\, m_{\tilde{u}}^{i4},\, m_{\tilde{q}}^{i1}] - \\
&\frac{1}{9}\,g_1^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,-1}[m_1,\, m_{\tilde{u}}^{i4},\, \tilde{\mu}] + \\
&\frac{1}{9}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,0}[m_1,\, m_{\tilde{u}}^{i4},\, \tilde{\mu}] + \\
&\frac{1}{72}\,g_1^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-2}[m_1,\, \tilde{\mu},\, m_{\tilde{q}}^{i1}] + \\
&\frac{1}{72}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-1}[m_1,\, \tilde{\mu},\, m_{\tilde{q}}^{i1}] + \\
&\frac{1}{72}\,g_1^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-2}[m_1,\, \tilde{\mu},\, m_{\tilde{q}}^{i2}] + \\
&\frac{1}{72}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-1}[m_1,\, \tilde{\mu},\, m_{\tilde{q}}^{i2}] - \\
&\frac{1}{18}\,g_1^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-2}[m_1,\, \tilde{\mu},\, m_{\tilde{u}}^{i3}] - \\
&\frac{1}{18}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-1}[m_1,\, \tilde{\mu},\, m_{\tilde{u}}^{i3}] - \\
&\frac{1}{18}\,g_1^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-2}[m_1,\, \tilde{\mu},\, m_{\tilde{u}}^{i4}] - \\
&\frac{1}{18}\,m_1\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-1}[m_1,\, \tilde{\mu},\, m_{\tilde{u}}^{i4}] - \\
&\frac{1}{4}\,g_2^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,-1}[m_2,\, m_{\tilde{q}}^{i1},\, \tilde{\mu}] + \\
&\frac{1}{4}\,m_2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_2^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,0}[m_2,\, m_{\tilde{q}}^{i1},\, \tilde{\mu}] - \\
&\frac{1}{4}\,g_2^2\,\frac{1}{m_\Phi^{2}}\,c_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,-1}[m_2,\, m_{\tilde{q}}^{i2},\, \tilde{\mu}] + \\
&\frac{1}{4}\,m_2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_2^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,0}[m_2,\, m_{\tilde{q}}^{i2},\, \tilde{\mu}] - \\
&\frac{1}{8}\,g_2^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-2}[m_2,\, \tilde{\mu},\, m_{\tilde{q}}^{i1}] - \\
&\frac{1}{8}\,m_2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_2^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-1}[m_2,\, \tilde{\mu},\, m_{\tilde{q}}^{i1}] - \\
&\frac{1}{8}\,g_2^2\,s_\gamma^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-2}[m_2,\, \tilde{\mu},\, m_{\tilde{q}}^{i2}] - \\
&\frac{1}{8}\,m_2\,s_\gamma\,\tilde{\mu}\,c_\gamma\,g_2^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{2,2,1,-1}[m_2,\, \tilde{\mu},\, m_{\tilde{q}}^{i2}] - \\
&\frac{4}{9}\,m_3\,c_\gamma\,g_3^2\,\frac{1}{m_\Phi^{2}}\,\overline{y_u}^{i2i3}\,(c_\gamma\,a_u^{i1i4} + s_\gamma\,\tilde{\mu}\,y_u^{i1i4})\,LF_{1,1,1,0}[m_3,\, m_{\tilde{q}}^{i1},\, m_{\tilde{u}}^{i4}] + \\
&\frac{1}{9}\,m_3\,s_\gamma\,g_3^2\,\overline{y_u}^{i2i3}\,(s_\gamma\,a_u^{i1i4} - \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{2,2,1,-1}[m_3,\, m_{\tilde{q}}^{i1},\, m_{\tilde{u}}^{i4}] - \\
&\frac{4}{9}\,m_3\,c_\gamma\,g_3^2\,\frac{1}{m_\Phi^{2}}\,y_u^{i1i4}\,(c_\gamma\,\overline{a_u}^{i2i3} + s_\gamma\,\tilde{\mu}\,\overline{y_u}^{i2i3})\,LF_{1,1,1,0}[m_3,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i3}] + \\
&\frac{1}{9}\,m_3\,s_\gamma\,g_3^2\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{i2i3} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{2,2,1,-1}[m_3,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i3}] - \\
&\frac{2}{9}\,g_3^4\,LF_{2,1,1,-1}[m_3,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} - \frac{4}{9}\,g_3^4\,m_3^2\,LF_{2,1,1,0}[m_3,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i4}]\,\delta_{i1i2}\,\delta_{i3i4} + \\
&\frac{1}{9}\,m_3\,s_\gamma\,g_3^2\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{i2i3} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{2,2,1,-1}[m_3,\, m_{\tilde{u}}^{i3},\, m_{\tilde{q}}^{i2}] + \\
&\frac{1}{9}\,m_3\,s_\gamma\,g_3^2\,\overline{y_u}^{i2i3}\,(s_\gamma\,a_u^{i1i4} - \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{2,2,1,-1}[m_3,\, m_{\tilde{u}}^{i4},\, m_{\tilde{q}}^{i1}] - \\
&\frac{1}{6}\,\tilde{\mu}\,c_\gamma\,\frac{1}{m_\Phi^{2}}\,\overline{y_d}^{i2p}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,(s_\gamma\,a_d^{rp} + \tilde{\mu}\,c_\gamma\,y_d^{rp})\,LF_{1,1,1,0}[m_{\tilde{d}}^{p},\, m_{\tilde{q}}^{r},\, \tilde{\mu}] + \\
&\frac{1}{12}\,s_\gamma\,\tilde{\mu}\,\overline{y_d}^{i2p}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,(c_\gamma\,a_d^{rp} - s_\gamma\,\tilde{\mu}\,y_d^{rp})\,LF_{2,1,1,0}[m_{\tilde{d}}^{p},\, m_{\tilde{q}}^{r},\, \tilde{\mu}] + \\
&\frac{1}{12}\,s_\gamma\,\tilde{\mu}\,\overline{y_d}^{i2p}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,(-c_\gamma\,a_d^{rp} + s_\gamma\,\tilde{\mu}\,y_d^{rp})\,LF_{3,1,1,-1}[m_{\tilde{d}}^{p},\, m_{\tilde{q}}^{r},\, \tilde{\mu}] + \\
&\frac{1}{24}\,s_\gamma\,\tilde{\mu}\,\overline{y_d}^{i2p}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,(-c_\gamma\,a_d^{rp} + s_\gamma\,\tilde{\mu}\,y_d^{rp})\,LF_{2,2,1,-1}[m_{\tilde{d}}^{p},\, \tilde{\mu},\, m_{\tilde{q}}^{r}] - \\
&\frac{1}{6}\,\tilde{\mu}\,c_\gamma\,\frac{1}{m_\Phi^{2}}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(s_\gamma\,\overline{a_d}^{pr} + \tilde{\mu}\,c_\gamma\,\overline{y_d}^{pr})\,LF_{1,1,1,0}[m_{\tilde{d}}^{r},\, m_{\tilde{q}}^{p},\, \tilde{\mu}] + \\
&\frac{1}{12}\,s_\gamma\,\tilde{\mu}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(c_\gamma\,\overline{a_d}^{pr} - s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,LF_{2,1,1,0}[m_{\tilde{d}}^{r},\, m_{\tilde{q}}^{p},\, \tilde{\mu}] + \\
&\frac{1}{12}\,s_\gamma\,\tilde{\mu}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(-c_\gamma\,\overline{a_d}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,LF_{3,1,1,-1}[m_{\tilde{d}}^{r},\, m_{\tilde{q}}^{p},\, \tilde{\mu}] + \\
&\frac{1}{24}\,s_\gamma\,\tilde{\mu}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(-c_\gamma\,\overline{a_d}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,LF_{2,2,1,-1}[m_{\tilde{d}}^{r},\, \tilde{\mu},\, m_{\tilde{q}}^{p}] + \\
&\frac{1}{12}\,s_\gamma\,\tilde{\mu}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(c_\gamma\,\overline{a_d}^{pr} - s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,LF_{2,1,1,0}[m_{\tilde{q}}^{p},\, m_{\tilde{d}}^{r},\, \tilde{\mu}] + \\
&\frac{1}{12}\,s_\gamma\,\tilde{\mu}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(-c_\gamma\,\overline{a_d}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,LF_{3,1,1,-1}[m_{\tilde{q}}^{p},\, m_{\tilde{d}}^{r},\, \tilde{\mu}] + \\
&\frac{1}{24}\,s_\gamma\,\tilde{\mu}\,y_d^{i1r}\,\overline{y_u}^{i2i3}\,y_u^{pi4}\,(-c_\gamma\,\overline{a_d}^{pr} + s_\gamma\,\tilde{\mu}\,\overline{y_d}^{pr})\,LF_{2,2,1,-1}[m_{\tilde{q}}^{p},\, \tilde{\mu},\, m_{\tilde{d}}^{r}] + \\
&\frac{1}{12}\,s_\gamma\,\tilde{\mu}\,\overline{y_d}^{i2p}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,(c_\gamma\,a_d^{rp} - s_\gamma\,\tilde{\mu}\,y_d^{rp})\,LF_{2,1,1,0}[m_{\tilde{q}}^{r},\, m_{\tilde{d}}^{p},\, \tilde{\mu}] + \\
&\frac{1}{12}\,s_\gamma\,\tilde{\mu}\,\overline{y_d}^{i2p}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,(-c_\gamma\,a_d^{rp} + s_\gamma\,\tilde{\mu}\,y_d^{rp})\,LF_{3,1,1,-1}[m_{\tilde{q}}^{r},\, m_{\tilde{d}}^{p},\, \tilde{\mu}] + \\
&\frac{1}{24}\,s_\gamma\,\tilde{\mu}\,\overline{y_d}^{i2p}\,\overline{y_u}^{ri3}\,y_u^{i1i4}\,(-c_\gamma\,a_d^{rp} + s_\gamma\,\tilde{\mu}\,y_d^{rp})\,LF_{2,2,1,-1}[m_{\tilde{q}}^{r},\, \tilde{\mu},\, m_{\tilde{d}}^{p}] + \\
&\frac{1}{54}\,m_1\,s_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,(-s_\gamma\,a_u^{i1i4} + \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{2,1,1,0}[m_{\tilde{q}}^{i1},\, m_1,\, m_{\tilde{u}}^{i4}] + \\
&\frac{1}{54}\,m_1\,s_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,(s_\gamma\,a_u^{i1i4} - \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{3,1,1,-1}[m_{\tilde{q}}^{i1},\, m_1,\, m_{\tilde{u}}^{i4}] + \\
&\frac{2}{9}\,m_3\,s_\gamma\,g_3^2\,\overline{y_u}^{i2i3}\,(-s_\gamma\,a_u^{i1i4} + \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{2,1,1,0}[m_{\tilde{q}}^{i1},\, m_3,\, m_{\tilde{u}}^{i4}] + \\
&\frac{2}{9}\,m_3\,s_\gamma\,g_3^2\,\overline{y_u}^{i2i3}\,(s_\gamma\,a_u^{i1i4} - \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{3,1,1,-1}[m_{\tilde{q}}^{i1},\, m_3,\, m_{\tilde{u}}^{i4}] + \\
&\frac{1}{54}\,m_1\,s_\gamma\,g_1^2\,y_u^{i1i4}\,(-s_\gamma\,\overline{a_u}^{i2i3} + \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{2,1,1,0}[m_{\tilde{q}}^{i2},\, m_1,\, m_{\tilde{u}}^{i3}] + \\
&\frac{1}{54}\,m_1\,s_\gamma\,g_1^2\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{i2i3} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{3,1,1,-1}[m_{\tilde{q}}^{i2},\, m_1,\, m_{\tilde{u}}^{i3}] + \\
&\frac{2}{9}\,m_3\,s_\gamma\,g_3^2\,y_u^{i1i4}\,(-s_\gamma\,\overline{a_u}^{i2i3} + \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{2,1,1,0}[m_{\tilde{q}}^{i2},\, m_3,\, m_{\tilde{u}}^{i3}] + \\
&\frac{2}{9}\,m_3\,s_\gamma\,g_3^2\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{i2i3} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{3,1,1,-1}[m_{\tilde{q}}^{i2},\, m_3,\, m_{\tilde{u}}^{i3}] + \\
&\frac{1}{54}\,m_1\,s_\gamma\,g_1^2\,y_u^{i1i4}\,(-s_\gamma\,\overline{a_u}^{i2i3} + \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{2,1,1,0}[m_{\tilde{u}}^{i3},\, m_1,\, m_{\tilde{q}}^{i2}] + \\
&\frac{1}{54}\,m_1\,s_\gamma\,g_1^2\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{i2i3} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{3,1,1,-1}[m_{\tilde{u}}^{i3},\, m_1,\, m_{\tilde{q}}^{i2}] + \\
&\frac{2}{9}\,m_3\,s_\gamma\,g_3^2\,y_u^{i1i4}\,(-s_\gamma\,\overline{a_u}^{i2i3} + \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{2,1,1,0}[m_{\tilde{u}}^{i3},\, m_3,\, m_{\tilde{q}}^{i2}] + \\
&\frac{2}{9}\,m_3\,s_\gamma\,g_3^2\,y_u^{i1i4}\,(s_\gamma\,\overline{a_u}^{i2i3} - \tilde{\mu}\,c_\gamma\,\overline{y_u}^{i2i3})\,LF_{3,1,1,-1}[m_{\tilde{u}}^{i3},\, m_3,\, m_{\tilde{q}}^{i2}] + \\
&\frac{1}{54}\,m_1\,s_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,(-s_\gamma\,a_u^{i1i4} + \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{2,1,1,0}[m_{\tilde{u}}^{i4},\, m_1,\, m_{\tilde{q}}^{i1}] + \\
&\frac{1}{54}\,m_1\,s_\gamma\,g_1^2\,\overline{y_u}^{i2i3}\,(s_\gamma\,a_u^{i1i4} - \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{3,1,1,-1}[m_{\tilde{u}}^{i4},\, m_1,\, m_{\tilde{q}}^{i1}] + \\
&\frac{2}{9}\,m_3\,s_\gamma\,g_3^2\,\overline{y_u}^{i2i3}\,(-s_\gamma\,a_u^{i1i4} + \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{2,1,1,0}[m_{\tilde{u}}^{i4},\, m_3,\, m_{\tilde{q}}^{i1}] + \\
&\frac{2}{9}\,m_3\,s_\gamma\,g_3^2\,\overline{y_u}^{i2i3}\,(s_\gamma\,a_u^{i1i4} - \tilde{\mu}\,c_\gamma\,y_u^{i1i4})\,LF_{3,1,1,-1}[m_{\tilde{u}}^{i4},\, m_3,\, m_{\tilde{q}}^{i1}] - \\
&\frac{1}{2}\,\tilde{\mu}^2\,\overline{y_d}^{i2p}\,y_d^{i1p}\,\overline{y_u}^{ri3}\,y_u^{ri4}\,LF_{2,1,1,0}[\tilde{\mu},\, m_{\tilde{d}}^{p},\, m_{\tilde{q}}^{r}] - \\
&\frac{1}{4}\,\overline{y_u}^{ri3}\,\overline{y_u}^{i2p}\,y_u^{ri4}\,y_u^{i1p}\,LF_{2,1,1,-1}[\tilde{\mu},\, m_{\tilde{q}}^{r},\, m_{\tilde{u}}^{p}] - \\
&\frac{1}{54}\,g_1^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_1,\, m_{\tilde{q}}^{i1},\, m_{\tilde{u}}^{i3},\, \tilde{\mu}] + \\
&\frac{1}{216}\,g_1^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_1,\, m_{\tilde{q}}^{i2},\, m_{\tilde{q}}^{i1},\, \tilde{\mu}] - \\
&\frac{1}{54}\,g_1^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_1,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i4},\, \tilde{\mu}] + \\
&\frac{2}{27}\,g_1^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_1,\, m_{\tilde{u}}^{i4},\, m_{\tilde{u}}^{i3},\, \tilde{\mu}] + \\
&\frac{1}{8}\,g_2^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_2,\, m_{\tilde{q}}^{i2},\, m_{\tilde{q}}^{i1},\, \tilde{\mu}] - \\
&\frac{2}{9}\,g_3^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_3,\, m_{\tilde{q}}^{i1},\, m_{\tilde{u}}^{i3},\, \tilde{\mu}] + \\
&\frac{2}{9}\,g_3^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_3,\, m_{\tilde{q}}^{i2},\, m_{\tilde{q}}^{i1},\, \tilde{\mu}] - \\
&\frac{2}{9}\,g_3^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_3,\, m_{\tilde{q}}^{i2},\, m_{\tilde{u}}^{i4},\, \tilde{\mu}] + \\
&\frac{2}{9}\,g_3^2\,\overline{y_u}^{i2i3}\,y_u^{i1i4}\,LF_{1,1,1,1,-1}[m_3,\, m_{\tilde{u}}^{i4},\, m_{\tilde{u}}^{i3},\, \tilde{\mu}]\Big)
\end{aligned}
$$