$$C_{uu}{}^{i1\_i2\_i3\_i4}{}_{\_} \rightarrow$$

$$\frac{1}{16\pi^2}\left(\frac{1}{324}\frac{1}{m_{\Phi}{}^2}c_{\gamma}{}^2\,\overline{y_u}^{pi3}\left(y_u^{pi4}\left(-81\,s_{\gamma}{}^2\,\overline{y_u}^{ri1}\,y_u^{ri2}+2\left(-7\,g_1{}^2+6\,g_3{}^2\right)\delta_{i1i2}\right)-36\,g_3{}^2\,y_u^{pi2}\,\delta_{i1i4}\right)+\right.$$

$$\frac{1}{18}g_3{}^4\left(3\,\delta_{i1i4}\,\delta_{i2i3}-\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{3,0}[m_3]+\frac{1}{12}g_3{}^4\left(3\,\delta_{i1i4}\,\delta_{i2i3}-\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{4,-1}[m_3]+$$

$$\frac{4}{45}g_3{}^4\left(-3\,\delta_{i1i4}\,\delta_{i2i3}+\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{5,-2}[m_3]+$$

$$\frac{1}{486}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(16\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{3,0}\left[m_{\tilde d}{}^p\right]-$$

$$\frac{5}{1296}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(16\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{4,-1}\left[m_{\tilde d}{}^p\right]+$$

$$\frac{2}{1215}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(16\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{5,-2}\left[m_{\tilde d}{}^p\right]+$$

$$\frac{8}{81}\sum_p g_1{}^4\,\mathsf{LF}_{3,0}\left[m_{\tilde e}{}^p\right]\delta_{i1i2}\,\delta_{i3i4}-\frac{5}{27}\sum_p g_1{}^4\,\mathsf{LF}_{4,-1}\left[m_{\tilde e}{}^p\right]\delta_{i1i2}\,\delta_{i3i4}+$$

$$\frac{32}{405}\sum_p g_1{}^4\,\mathsf{LF}_{5,-2}\left[m_{\tilde e}{}^p\right]\delta_{i1i2}\,\delta_{i3i4}+\frac{4}{81}\sum_p g_1{}^4\,\mathsf{LF}_{3,0}\left[m_{\tilde l}{}^p\right]\delta_{i1i2}\,\delta_{i3i4}-$$

$$\frac{5}{54}\sum_p g_1{}^4\,\mathsf{LF}_{4,-1}\left[m_{\tilde l}{}^p\right]\delta_{i1i2}\,\delta_{i3i4}+\frac{16}{405}\sum_p g_1{}^4\,\mathsf{LF}_{5,-2}\left[m_{\tilde l}{}^p\right]\delta_{i1i2}\,\delta_{i3i4}+$$

$$\frac{1}{243}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(4\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{3,0}\left[m_{\tilde q}{}^p\right]-$$

$$\frac{5}{648}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(4\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{4,-1}\left[m_{\tilde q}{}^p\right]+$$

$$\frac{4}{1215}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(4\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{5,-2}\left[m_{\tilde q}{}^p\right]+$$

$$\frac{1}{486}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(64\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{3,0}\left[m_{\tilde u}{}^p\right]-$$

$$\frac{5}{1296}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(64\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{4,-1}\left[m_{\tilde u}{}^p\right]+$$

$$\frac{2}{1215}\sum_p\left(27\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+\left(64\,g_1{}^4-9\,g_3{}^4\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{5,-2}\left[m_{\tilde u}{}^p\right]+$$

$$\frac{1}{54}c_{\gamma}{}^2\,\overline{y_u}^{pi3}\left(y_u^{pi4}\left(27\,s_{\gamma}{}^2\,\overline{y_u}^{ri1}\,y_u^{ri2}+2\left(-2\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}\right)-18\,g_3{}^2\,y_u^{pi2}\,\delta_{i1i4}\right)\mathsf{LF}_{1,2}[m_{\Phi}]+$$

$$\frac{1}{36}c_{\gamma}{}^2\,\overline{y_u}^{pi3}\,y_u^{pi4}\left(9\,c_{\gamma}{}^2\,\overline{y_u}^{ri1}\,y_u^{ri2}-4\,g_1{}^2\,\delta_{i1i2}\right)\mathsf{LF}_{2,1}[m_{\Phi}]+$$

$$\frac{1}{81}g_1{}^2\left(9\,c_{\gamma}{}^2\,\overline{y_u}^{pi3}\,y_u^{pi4}+4\,g_1{}^2\,\delta_{i3i4}\right)\mathsf{LF}_{3,0}[m_{\Phi}]\,\delta_{i1i2}-\frac{5}{54}g_1{}^4\,\mathsf{LF}_{4,-1}[m_{\Phi}]\,\delta_{i1i2}\,\delta_{i3i4}+$$

$$\frac{16}{405}g_1{}^4\,\mathsf{LF}_{5,-2}[m_{\Phi}]\,\delta_{i1i2}\,\delta_{i3i4}+\frac{4}{81}g_1{}^4\,\mathsf{LF}_{3,0}[\tilde\mu]\,\delta_{i1i2}\,\delta_{i3i4}+$$

$$\frac{2}{27}g_1{}^4\,\mathsf{LF}_{4,-1}[\tilde\mu]\,\delta_{i1i2}\,\delta_{i3i4}-\frac{32}{405}g_1{}^4\,\mathsf{LF}_{5,-2}[\tilde\mu]\,\delta_{i1i2}\,\delta_{i3i4}+$$

$$\frac{2}{243}g_1{}^2\left(9\,g_3{}^2\,\delta_{i1i4}\,\delta_{i2i3}+\left(8\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{2,1,0}\left[m_1,m_{\tilde u}^{i4}\right]+$$

$$\frac{2}{243}g_1{}^2\left(9\,g_3{}^2\,\delta_{i1i4}\,\delta_{i2i3}+\left(8\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{2,2,-1}\left[m_1,m_{\tilde u}^{i4}\right]+$$

$$\frac{4}{243}g_1{}^2\left(-9\,g_3{}^2\,\delta_{i1i4}\,\delta_{i2i3}+\left(-8\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{3,1,-1}\left[m_1,m_{\tilde u}^{i4}\right]+$$

$$\frac{2}{243}g_1{}^2\left(9\,g_3{}^2\,\delta_{i1i4}\,\delta_{i2i3}+\left(8\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{4,1,-2}\left[m_1,m_{\tilde u}^{i4}\right]+$$

$$\frac{1}{324}\left(-9\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+g_3{}^2\left(64\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{2,1,0}\left[m_3,m_{\tilde u}^{i4}\right]+$$

$$\frac{1}{324}\left(-9\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+g_3{}^2\left(64\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{2,2,-1}\left[m_3,m_{\tilde u}^{i4}\right]+$$

$$\frac{1}{324}\left(-225\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+g_3{}^2\left(-128\,g_1{}^2+75\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{3,1,-1}\left[m_3,m_{\tilde u}^{i4}\right]+$$

$$\frac{2}{81}g_3{}^2\left(9\,g_3{}^2\,\delta_{i1i4}\,\delta_{i2i3}+\left(8\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{4,1,-2}\left[m_3,m_{\tilde u}^{i4}\right]+$$

$$\frac{1}{27}\overline{y_u}^{pi3}\left(y_u^{pi4}\left(-2\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}-9\,g_3{}^2\,y_u^{pi2}\,\delta_{i1i4}\right)\mathsf{LF}_{2,1,0}\left[m_{\tilde q}{}^p,\tilde\mu\right]+$$

$$\frac{1}{54}\overline{y_u}^{pi3}\left(y_u^{pi4}\left(2\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}+9\,g_3{}^2\,y_u^{pi2}\,\delta_{i1i4}\right)\mathsf{LF}_{2,2,-1}\left[m_{\tilde q}{}^p,\tilde\mu\right]+$$

$$\frac{1}{54}\overline{y_u}^{pi3}\left(y_u^{pi4}\left(2\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}+9\,g_3{}^2\,y_u^{pi2}\,\delta_{i1i4}\right)\mathsf{LF}_{3,1,-1}\left[m_{\tilde q}{}^p,\tilde\mu\right]+$$

$$\frac{4}{243}g_1{}^2\left(-9\,g_3{}^2\,\delta_{i1i4}\,\delta_{i2i3}+\left(-8\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{2,1,0}\left[m_{\tilde u}^{i4},m_1\right]+$$

$$\frac{2}{243}g_1{}^2\left(9\,g_3{}^2\,\delta_{i1i4}\,\delta_{i2i3}+\left(8\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{3,1,-1}\left[m_{\tilde u}^{i4},m_1\right]+$$

$$\frac{1}{162}\left(9\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}-g_3{}^2\left(64\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{2,1,0}\left[m_{\tilde u}^{i4},m_3\right]+$$

$$\frac{1}{324}\left(-9\,g_3{}^4\,\delta_{i1i4}\,\delta_{i2i3}+g_3{}^2\left(64\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}\,\delta_{i3i4}\right)\mathsf{LF}_{3,1,-1}\left[m_{\tilde u}^{i4},m_3\right]+$$

$$\frac{1}{54}\overline{y_u}^{pi3}\left(y_u^{pi4}\left(2\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}+9\,g_3{}^2\,y_u^{pi2}\,\delta_{i1i4}\right)\mathsf{LF}_{2,1,0}\left[\tilde\mu,m_{\tilde q}{}^p\right]+$$

$$\frac{1}{27}\overline{y_u}^{pi3}\left(y_u^{pi4}\left(-11\,g_1{}^2+3\,g_3{}^2\right)\delta_{i1i2}-9\,g_3{}^2\,y_u^{pi2}\,\delta_{i1i4}\right)\mathsf{LF}_{3,1,-1}\left[\tilde\mu,m_{\tilde q}{}^p\right]+$$

$$\frac{1}{54}\overline{y_u}^{pi3}\left(y_u^{pi4}\left(8\,g_1{}^2-3\,g_3{}^2\right)\delta_{i1i2}+9\,g_3{}^2\,y_u^{pi2}\,\delta_{i1i4}\right)\mathsf{LF}_{4,1,-2}\left[\tilde\mu,m_{\tilde q}{}^p\right]+$$

$$\frac{8}{81}g_1{}^4\,\mathsf{LF}_{2,1,1,-1}\left[m_1,m_{\tilde u}^{i4},m_{\tilde u}^{i2}\right]\delta_{i1i2}\,\delta_{i3i4}+\frac{16}{81}g_1{}^4\,m_1{}^2\,\mathsf{LF}_{2,1,1,0}\left[m_1,m_{\tilde u}^{i4},m_{\tilde u}^{i2}\right]\delta_{i1i2}\,\delta_{i3i4}+$$

$$\frac{1}{72}g_3{}^4\,\mathsf{LF}_{2,1,1,-1}\left[m_3,m_{\tilde u}^{i4},m_{\tilde u}^{i2}\right]\delta_{i1i2}\,\delta_{i3i4}+\frac{5}{18}g_3{}^4\,m_3{}^2\,\mathsf{LF}_{2,1,1,0}\left[m_3,m_{\tilde u}^{i4},m_{\tilde u}^{i2}\right]\delta_{i1i2}\,\delta_{i3i4}+$$

$$\frac{7}{24}g_3{}^4\,\mathsf{LF}_{2,1,1,-1}\left[m_3,m_{\tilde u}^{i4},m_{\tilde u}^{i3}\right]\delta_{i1i4}\,\delta_{i2i3}-\frac{1}{6}g_3{}^4\,m_3{}^2\,\mathsf{LF}_{2,1,1,0}\left[m_3,m_{\tilde u}^{i4},m_{\tilde u}^{i3}\right]\delta_{i1i4}\,\delta_{i2i3}+$$

$$\frac{1}{4}\overline{y_u}^{pi3}\,\overline{y_u}^{ri1}\,y_u^{pi4}\,y_u^{ri2}\,\mathsf{LF}_{2,1,1,-1}\left[\tilde\mu,m_{\tilde q}{}^p,m_{\tilde q}{}^r\right]-\frac{2}{27}g_1{}^2\,g_3{}^2\,\mathsf{LF}_{1,1,1,1,-1}\left[m_1,m_3,m_{\tilde u}^{i4},m_{\tilde u}^{i2}\right]$$

$$\delta_{i1i2}\,\delta_{i3i4}-\frac{4}{27}m_1\,m_3\,g_1{}^2\,g_3{}^2\,\mathsf{LF}_{1,1,1,1,0}\left[m_1,m_3,m_{\tilde u}^{i4},m_{\tilde u}^{i2}\right]\delta_{i1i2}\,\delta_{i3i4}+$$

$$\frac{2}{9}g_1{}^2\,g_3{}^2\,\mathsf{LF}_{1,1,1,1,-1}\left[m_1,m_3,m_{\tilde u}^{i4},m_{\tilde u}^{i3}\right]\delta_{i1i4}\,\delta_{i2i3}+$$

$$\left.\frac{4}{9}m_1\,m_3\,g_1{}^2\,g_3{}^2\,\mathsf{LF}_{1,1,1,1,0}\left[m_1,m_3,m_{\tilde u}^{i4},m_{\tilde u}^{i3}\right]\delta_{i1i4}\,\delta_{i2i3}\right)$$