Vector multiplet action with auxiliary fields A_μ, $T^-_{\mu\nu}$ — anti-self-dual.

$$-\frac{i}{2}\left(Z^I \bar{F}_I - \bar{Z}^I F_I \right) R$$

$$+ \Big[i \left(\partial_\mu F_I + i A_\mu F_I \right) \left(\partial^\mu \bar{Z}^I - i A^\mu \bar{Z}^I \right)$$

$$+ \frac{i}{4} F_{IJ} \left(F^{-I}_{\mu\nu} - \frac{1}{4} \bar{Z}^I T^-_{\mu\nu} \right) \left(F^{-J\mu\nu} - \frac{1}{4} \bar{Z}^J T^{-\mu\nu} \right)$$

$$+ \frac{i}{8} \bar{F}_I \left(F^{-I}_{\mu\nu} - \frac{1}{4} \bar{Z}^I T^-_{\mu\nu} \right) T^{-\mu\nu}.$$

$$+ \frac{i}{32} \bar{F}\, T^-_{\mu\nu} T^{-\mu\nu} + \text{h.c.} \Big]$$

Gauge invariance:

$$Z^I(x) \to \lambda(x) Z^I(x) \Rightarrow F_I(x) \to \lambda(x) F_I(x)$$

$$g_{\mu\nu} \to |\lambda(x)|^2 g_{\mu\nu}$$

After eliminating $A_\mu(x)$, $T^-_{\mu\nu}(x)$ using there e.o.m. we get the desired action.

Mohaupt, hep-th 0.007195, Sec. 3