The equilibrium beam envelope (second order moment) $\langle X_i X_j \rangle$ is calculated by the `EMITTANCE(EMIT)` command and `Emittance[]` function by solving:

$$\langle X_i X_j \rangle = \mathrm{M} \langle X_i X_j \rangle \mathrm{M}^T + \Delta_{ij} \ , \tag{85}$$

where $X_i = (x, p_x, y, p_y, z, \delta)$ is the deviation from the closed orbit at the entrance of the beam line, M the one-turn transfer matrix including the damping, and Δ_{ij} the one-turn excitation due to synchrotron radiation and intrabeam scattering. The excitation Δ_{ij} is affected by the envelope in the case of intrabeam (`INTRA`). The transfer matrix M can be affected by the envelope due to space-charge in the case of `WSPAC`. Thus iterations are done for such cases.

In the case of an ideal ring, as the intrinsic vertical emittance might be too small, the intrabema or space charge effects can be unrealistically large. For such cases, a global variable `MINCOUP` is useful to specify their *minimum* values as:

$$\varepsilon_{x,y} = \texttt{Max}\left[\varepsilon^0_{x,y}, \texttt{MINCOUP} \times (\varepsilon^0_x + \varepsilon^0_y)\right] \ , \tag{86}$$

where $\varepsilon^0_{x,y}$ are the emittances given only by the lattice.