The steady state under given conditions can be expressed with following equations:

$$\left(C_{Cl\_in} - C_{Na\_in} - C_{K\_in}\right)V_i = -\frac{EC}{F} ,$$

$$\left(C_{Cl\_out} - C_{Na\_out} - C_{K\_out}\right)V_o = \frac{EC}{F} ,$$

$$C_{K\_in} + C_{Na\_in} + C_{Cl\_in} = C_{K\_out} + C_{Na\_out} + C_{Cl\_out} ,$$

$$E = \frac{RT}{F} \ln \frac{C_{Cl\_in}}{C_{Cl\_out}} .$$

After some mathematical transformations of these equations, following formula can be written:

$$E = \frac{RT}{F} \ln \frac{1}{C_{Cl\_out}} \left[C_{Cl\_out} - \frac{EC}{2F} \left(\frac{1}{V_i} + \frac{1}{V_o} \right) \right]$$

This can be transformed to a less complicated form:

$$\ln E_2 = \left(-\frac{m}{np} \right) E_2 + \left(\frac{m}{np} \right) ,$$

$$m = C_{Cl\_out} > 0 ,$$

$$n = \frac{RT}{F} > 0 ,$$

$$p = \frac{C}{2F} \left(\frac{1}{V_i} + \frac{1}{V_o} \right) > 0 ,$$

$$E_2 = \frac{m - pE}{m} .$$

Now, it can be easily conceived that there is only one solution for this equation, i.e. $E_2 = 1$, which yields further: $E = (m - mE_2)/p = 0$.