We have:

- Expected received message: $X = [x_0, x_1, ..., x_N]$. Where X is a 32 bit word randomly generated. N is the number of sent messages. x_i is a 32 bit word randomly generated.
- Number of wrong bits in the each received message: $WB = [Wb_0, Wb_1, ..., Wb_N]$. Where Wb_i corresponds to the amount of errors in a 32 bit word, i.e each received message.

Then, the BER of each received message x_i is $BER_i = \frac{Wb_i}{32N}$ since all the received signals are 32 bit words. So we have a N dimension array of BER: $BER = [BER_0, BER_1, ..., BER_N]$.

Then the average BER is:

$$BER_{AVG} = E\{BER\} = \frac{1}{32} E\{WB\} = \frac{1}{32} \sum_{i=0}^{N} \frac{1}{N} Wb_i = \frac{1}{32N} \sum_{i=0}^{N} Wb_i$$