

$$n := 1, 3 \dots 80 \quad L_{data} := 1024 \quad P_f := 0.0175 \quad p := 0.05 \quad \text{DataRate} := 1$$

$$L_{rts} := 20 \quad L_{cts} := 14 \quad L_{ack} := 14 \quad P_b := 10^{-6} \quad P_e := 1 - (1 - P_b)^{L_{rts} + L_{cts} + L_{data} + L_{ack}}$$

$$A1 := \frac{P_{cce}}{16 \left(\frac{P_{ce}}{8} + \frac{P_{cce}}{32} \right)} \quad A2 := \frac{P_{cce}}{16 \left(\frac{P_{ce}}{8} + \frac{P_{cce}}{32} \right)} \cdot \sum_{L=1}^{15} \left(\frac{1 - P_f}{1 - 2P_f} \right)^L \quad A3 := A1 + A2 \quad B1 := \frac{1}{32}$$

$$D2 := \frac{P_{cce}}{128 \left(\frac{P_{ce}}{8} + \frac{P_{cce}}{256} \right)} \cdot \sum_{L=1}^{127} \left(\frac{1 - P_f}{1 - 2P_f} \right)^L \quad D3 := D1 \cdot C3 + D2 \cdot C3 \quad E1 := \frac{P_{cce}}{256 \left(\frac{P_{ce}}{8} + \frac{P_{cce}}{512} \right)}$$

$$G1 := \frac{P_{cce}}{1024 \left(\frac{P_{ce}}{8} \right)} \quad G2 := \frac{P_{cce}}{1024 \left(\frac{P_{ce}}{8} \right)} \cdot \sum_{L=1}^{1023} \left(\frac{1 - P_f}{1 - 2P_f} \right)^L \quad G3 := \frac{(G1 + G2)}{(1 - G1 - G2)} \cdot F3$$

$$\tau_{aw} := \frac{1}{1 + A3 + B3 + C3 + D3 + E3 + F3 + G3} \quad \tau_{aw} = 0.175$$

$$t_{DATA} := \left[144 + 48 + \frac{8 \cdot (34 + L_{data})}{\text{DataRate}} \right] \cdot 10^{-6}$$

$$T_{atime} := 20 \cdot 10^{-6} \quad t_{SIFS} := 10 \cdot 10^{-6} \quad t_{DIFS} := 50 \cdot 10^{-6} \quad t_{Delay} := 1 \cdot 10^{-6} \quad t_{RTS} := 352 \cdot 10^{-6}$$

$$T_s := t_{RTS} + 3 \cdot t_{SIFS} + 4 \cdot t_{Delay} + t_{CTS} + t_{DATA} + t_{ACK} + t_{DIFS}$$

$$T_c := t_{DIFS} + t_{RTS} + T_{atime}$$

$$t_{CTStimeout} := t_{SIFS} + t_{CTS} + T_{atime} \quad t_{ACKtimeout} := t_{SIFS} + t_{ACK} + T_{atime} \quad T_{rts} :=$$

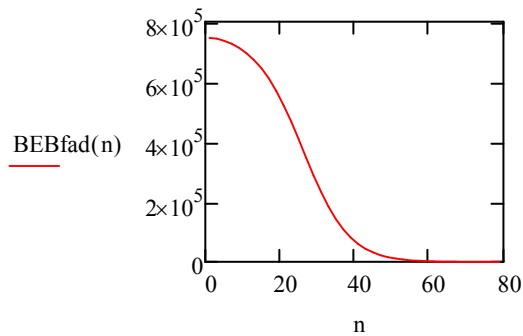
$$T_{edata} := t_{RTS} + t_{CTS} + t_{DIFS} + 2 \cdot t_{SIFS} + t_{DATA} + t_{ACKtimeout} + 3 \cdot t_{Delay} \quad T_{eack} :=$$

$$P_{rts} := 1 - (P_b)^{L_{rts}} \quad P_{ects} := (1 - P_b)^{L_{rts}} \cdot \left[1 - (1 - P_b)^{L_{cts}} \right] \quad P_{edata} := (1 - P_b)^{L_{rts} + L_c}$$

$$P_{tr}(n) := 1 - (1 - \tau_{aw})^n \quad P_s(n) := \frac{n \cdot \tau_{aw} \cdot (1 - \tau_{aw})^{n-1}}{1 - (1 - \tau_{aw})^n} \quad P_c(n) := 1 - P_s(n) \quad BEB_{fad}(n) :=$$

BEB_{fad}(n) =

7.471·10 ⁵
7.449·10 ⁵
7.374·10 ⁵
7.27·10 ⁵
7.134·10 ⁵
6.959·10 ⁵
6.736·10 ⁵
6.457·10 ⁵
6.113·10 ⁵



$5.7 \cdot 10^5$
$5.217 \cdot 10^5$
$4.673 \cdot 10^5$
$4.086 \cdot 10^5$
$3.481 \cdot 10^5$
$2.889 \cdot 10^5$
...

BEB Fading 802.11b 1Mbps

$$P_{ce} := (1 - p) \cdot (1 - P_e) \quad P_{cpe} := p + (1 - p) \cdot P_e$$

$$\frac{P_{cpe}}{\left(\frac{P_{ce}}{8} + \frac{P_{cpe}}{64}\right)} \quad B2 := \frac{P_{cpe}}{32\left(\frac{P_{ce}}{8} + \frac{P_{cpe}}{64}\right)} \cdot \sum_{L=1}^{31} \left(\frac{1 - P_f}{1 - 2P_f}\right)^L \quad B3 := B1 \cdot A3 + B2 \cdot A3 \quad C1 := \frac{P}{64\left(\frac{P_{ce}}{8}\right)}$$

$$E2 := \frac{P_{cpe}}{256\left(\frac{P_{ce}}{8} + \frac{P_{cpe}}{512}\right)} \cdot \sum_{L=1}^{255} \left(\frac{1 - P_f}{1 - 2P_f}\right)^L \quad E3 := E1 \cdot D3 + E2 \cdot D3 \quad F1 := \frac{P_{cpe}}{512\left(\frac{P_{ce}}{8} + \frac{P_{cpe}}{1024}\right)}$$

$$10^{-6} \quad t_{CTS} := 304 \cdot 10^{-6} \quad t_{ACK} := 304 \cdot 10^{-6}$$

$$T_{cts} := t_{RTS} + t_{SIFS} + t_{DIFS} + 2 \cdot t_{SIFS}$$

$$= t_{RTS} + t_{CTStimeout} + t_{DIFS} + t_{Delay}$$

$$t_{RTS} + t_{CTS} + t_{DIFS} + 3 \cdot t_{SIFS} + t_{DATA} + 4 \cdot t_{Delay}$$

$$t_s \cdot \left[1 - (1 - P_b)^{L_{data}}\right] \quad P_{eack} := (1 - P_b)^{L_{rts} + L_{cts} + L_{data}} \cdot \left[1 - (1 - P_b)^{L_{ack}}\right]$$

$$\frac{P_{tr}(n) \cdot P_s(n) \cdot (1 - P_e) \cdot (8 \cdot L_{data})}{(1 - P_{tr}(n)) \cdot T_{atime} + P_{tr}(n) \cdot P_s(n) \cdot T_s \cdot (1 - P_e) + P_{tr}(n) \cdot (1 - P_e) \cdot T_c + P_{tr}(n) \cdot P_s(n) \cdot (P_{rts} \cdot T_{rts} + P_{cts} \cdot T_{cts} + P_{difs} \cdot T_{difs} + P_{sifs} \cdot T_{sifs} + P_{data} \cdot T_{data} + P_{delay} \cdot T_{delay})}$$

$$\frac{\text{cce}}{\left(1 + \frac{\text{Pcce}}{128}\right)} \quad \text{C2} := \frac{\text{Pcce}}{64\left(\frac{\text{Pce}}{8} + \frac{\text{Pcce}}{128}\right)} \cdot \sum_{L=1}^{63} \left(\frac{1 - \text{Pf}}{1 - 2\text{Pf}}\right)^L \quad \text{C3} := \text{C1} \cdot \text{B3} + \text{C2} \cdot \text{B3} \quad \text{D1} := \frac{\text{P}}{128\left(\frac{\text{Pce}}{8}\right)}$$

$$\frac{\text{ce}}{24} \quad \text{F2} := \frac{\text{Pcce}}{512\left(\frac{\text{Pce}}{8} + \frac{\text{Pcce}}{1024}\right)} \cdot \sum_{L=1}^{511} \left(\frac{1 - \text{Pf}}{1 - 2\text{Pf}}\right)^L \quad \text{F3} := \text{F1} \cdot \text{E3} + \text{F2} \cdot \text{E3}$$

Tects + Pedata·Tedata + Peack·Teack)

$$\frac{cce}{2 + \frac{Pcce}{256}}$$