

$I_X = 16.5 \text{ mA}$
 $R_X = 15.5 \text{ mA}$
 $I_{RX_OFF} = 1.5 \text{ mA}$
 $SLEEP = 0.02 \text{ mA}$
 $AT 96 RF 230$

$ATmega1281$
 $AT 3.3V/1MHz$
 1 mA $IDLE = 0.25 \text{ mA}$

$I_X = 17.5 \text{ mA}$
 $R_X = 16.5 \text{ mA}$
 $IDLE = 2.5 \text{ mA}$



$$E = (P_{TX} \times t_{TX}) + (P_{RX} \times t_{RX}) + (P_{IDLE} \times t_{IDLE})$$

$P_{TX} = 17.5 \text{ mA} \times 3.3 \text{ V} = 57.75 \text{ mW}$
 $P_{RX} = 16.5 \times 3.3 = 54.45 \text{ mW}$
 $P_{IDLE} = 2.5 \times 3.3 = 8.25 \text{ mW}$
 $P_{IDLE2} = 0.25 \text{ mA} \times 3.3 = 0.825 \text{ mW}$

~~CSMA-ON ACK OFF~~
 $t_{TX} = 0$
 $t_{RX1} = 1.92 \times 48 = 92.16 - 10 \text{ ms} \times 48 = 91.68$
 $t_{IDLE1} = 0.48$
 $E_1 = 4.99 + 0.00396 = 4.99396 \text{ SOURCE}$

$P_{IDLE} = 1.92 \text{ a}$
 $t_{IDLE} = 1.92 \times 48 = 92.16$

~~CSMA-ON ACK OFF~~
 $t_{TX} = 0$
 $t_{IDLE2} = 10 \text{ ms} \times 90 = 0.9$
 $t_{RX2} = 92.16 + 0.796 - 0.9 = 92.056$
 $E_2 = 5.007 + 0.007625 = 5.014625 \text{ SOURCE}$

~~CSMA-ON ACK OFF~~
 $t_{IDLE3} = 10 \text{ ms} \times 48 = 0.48$
 $t_{RX3} = 92.16 + 1.054 - 0.48 = 92.734$
 $E_3 = 5.049 + 0.00396 = 5.05296$
 $t_{IDLE4} = 10 \text{ ms} \times 92 = 0.92$
 $t_{RX4} = 92.16 + 1.056 - 0.92 = 92.296$
 $E_4 = 5.0255 + 0.00739 = 5.03289$

$t_{IDLE4} = 10 \text{ ms} \times 188 = 1.88$
 $t_{RX2} = 92.16 + 0.824 - 1.88 = 91.104$
 $E_1 = 4.96 + 0.0155 = 4.9755 \text{ SOURCE}$

$t_{IDLE5} = 10 \text{ ms} \times 189 = 1.89$
 $t_{RX4} = 92.16 + 1.056 - 1.89 = 91.326$
 $E_4 = 4.9727 + 0.015525 = 4.9882$

$$F_1 = 0,016632 + 5,1435 + 0,0003 = 5,15983$$