1. Data Rate

$R = (BW)\log(1+SINR)$ $\quad SINR = \frac{S}{I+N}$ $\Rightarrow$ (W)

2. Watt $\leftrightarrow$ dB $\quad 10 \cdot \log(\text{ratio}) = \sim dB$

$$\log(\text{ratio}) = \frac{\sim dB}{10}$$

$$(\text{ratio}) = 10^{\frac{\sim dB}{10}}$$

3. Cost231

1.9GHz $\quad BW = 20MHz$

Noise $\Rightarrow$ kTB $\quad k = 1.38 \times 10^{-23}$

$T = 300k \doteq 26^\circ C$

$B = 20 \times 10^6$

$= 8.28 \times 10^{-14}$ dBm

$= 0.001$ W

4. SUI

28GHz $\quad BW = 40MHz$

Noise $\Rightarrow$ kTB

$k = 1.38 \times 10^{-23}$

$T = 300k \doteq 26^\circ C$

$B = 40 \times 10^6$

$= 8.28 \times 2 \times 10^{-14}$ dBm

$= 0.001$ W