Computing C/N_0

$$C/N_O = \frac{G_S S / L_i}{N_o + \frac{G_J J}{G_P B_0}}$$

- G_S = Antenna gain towards signal (dBic)
- S = Signal level (dBW / dBm)
- L_i = system implementation loss
  - Compared to "perfect" linear, analog rcvr
  - Varies from mfr-to-mfr – use 2 dB as estimate if unknown
- N_0 = system noise temperature density (dBW/Hz or dBm/Hz)
  - Essentially the Rcvr Noise Figure combined with antenna noise
  - $N_0 = kT_{SYS}$ = typically -200 dBW/Hz or –170 dBm/Hz
    $= k(T_{ANT} + T_0(N_{RCVR} - 1)$
    - T_{ANT} = 70-100°K
    - T_0 = 290°K
    - N_{RCVR} = rcvr noise figure at input $\{10^{(N/10)}\}$
- G_J = Antenna gain towards interference (or jamming) (dBic)
  - Presumed equal to G_S for commercial systems (non-mil)
- J = Interference (jamming) signal level (dBW / dBm)
- $G_P B_0$ = Spread Spectrum Processing Gain
  - 60.1 dB for Narrow Band white noise (< 2 MHz)
  - 73.2 dB for 20 MHz white noise