

Assignment 2

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2.6

A binary signal sent over a 3kHz channel with SNR of 20dB has a maximum achievable data rate of $3000 \log_2(1 + 100) = 19974$ bits/sec.

2.10

Frequency is $\frac{c}{\lambda}$ where c is the speed of light. So with a wavelength of $1cm = 0.01m$, then $f = \frac{3 * 10^8}{0.01} = 3 * 10^{10}$. The lower bound is $f = \frac{3 * 10^8}{5} = 6 * 10^7$.

2.11

2.13

2.14