**Lab2 OFDM: Performance Evaluation**

**Exercise 1: OFDM System in AWGN Channel**

1. **What is the sub-carrier spacing, duration of transmitted OFDM symbol and duration of CP in seconds?**

for Bw = 37/50 \* 1e6:

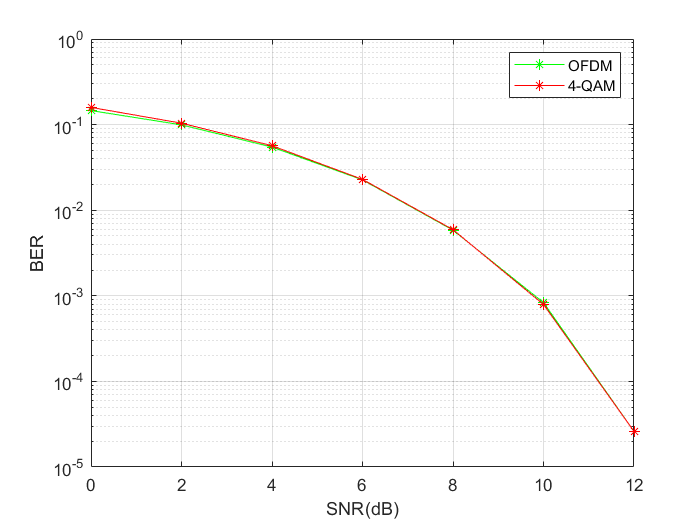
Sub-carrier Spacing = bandwidth / sub carrier number = 12.19 kHz

Duration of transmitted OFDM Symbol =sub carrier number / bandwidth= 82.05 us

Duration of Cp = Ncp / Bandwidth = 8.11 us when a = 0.1.

**2. Compare the results with a 4-QAM BER in AWGN channel and comment on your observations.**

With the iteration time as 1000. The BER result of AWGN channel 4-QAM and OFDM is shown as below. The performance of these two tech are similar in this case.

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1. **BER vs SNR(OFDM and 4-QAM)**

**3. Change the CP length and comment on its effect in AWGN channel.**