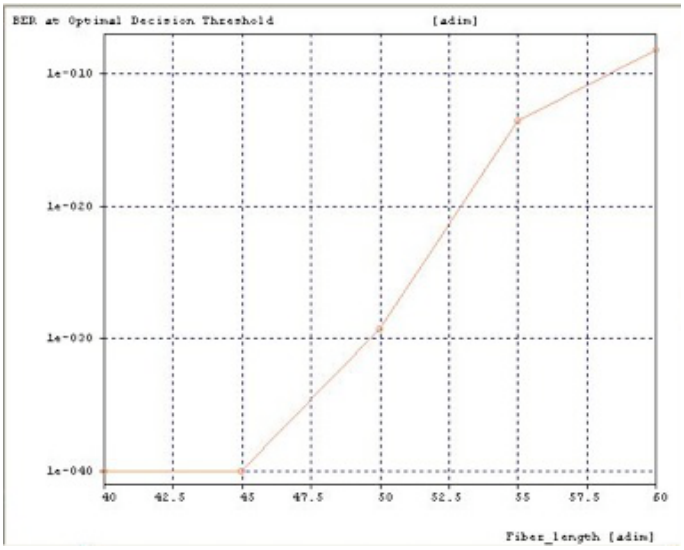
Lab #7. Optical network planning and modeling in Optsim

1. Dependency of Noise Figure of amplifier

The question: for which noise figure value is BER (Bit Error Rate) worse than 10^{-12}
Answer: 5th figure has worse BER value.

2. Dependency of fiber span length

The question: for which length is BER worse than 10^{-12} ?
Answer: for length more than 55 km



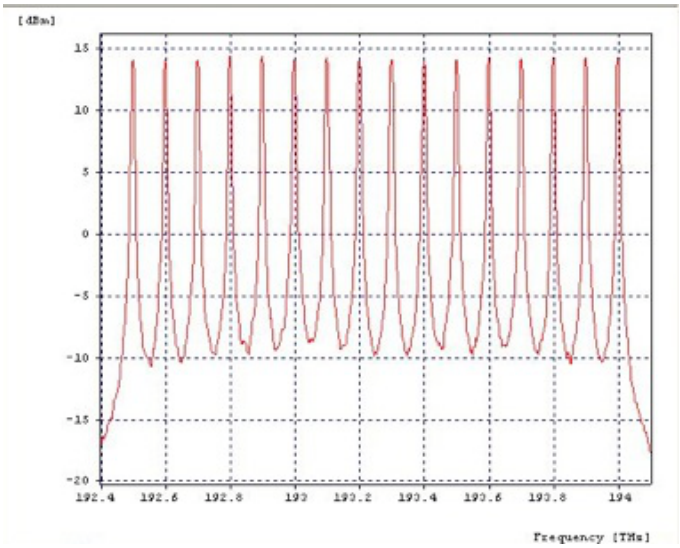
3. Raman's crosstalk – Raman gain coefficient is varied in this task. The value of coefficient is little artificial.

Question: How is the shape of spectra altered due to Raman's crosstalk? Describe also the power level at input and output. Include the third screenshot of spectra.

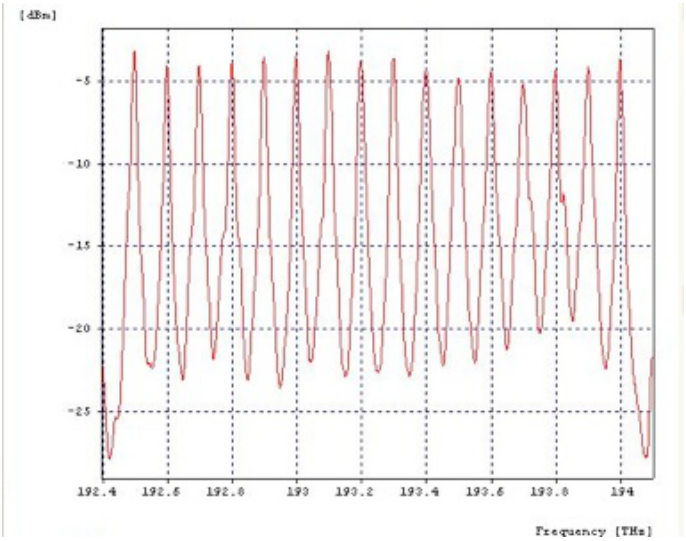
Answer: All channels have small pumps. Crystal lattice for power level.

Lab #7. Optical network planning and modeling in Optsim

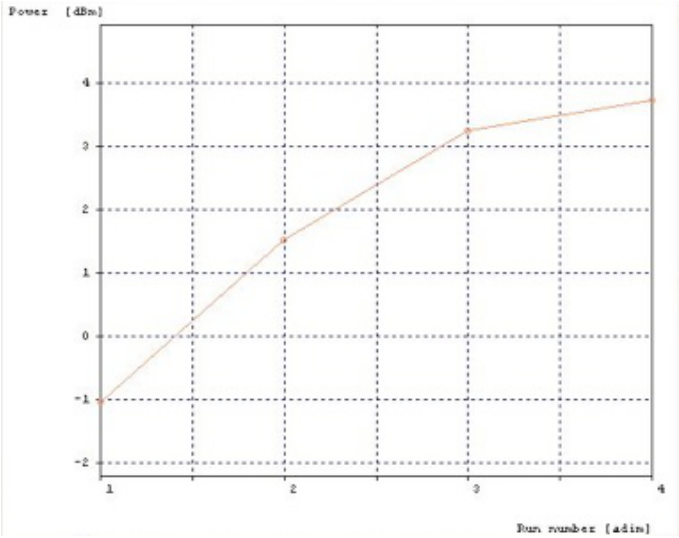
Power level at input:



Power level at output:

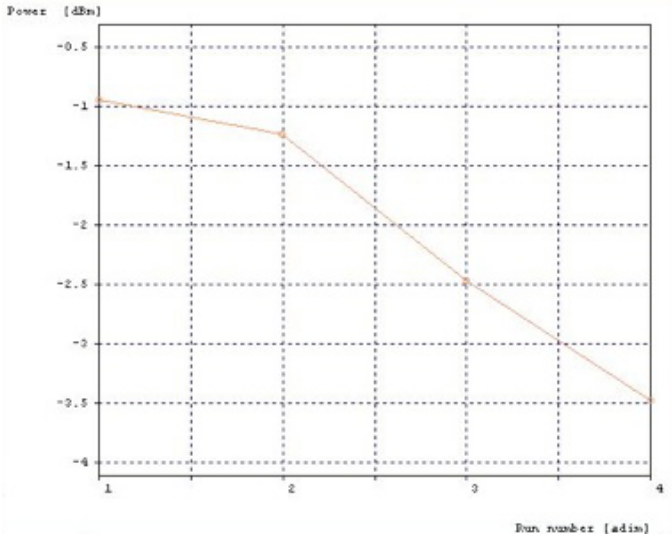


Correlation diagram of power for the ch 1.

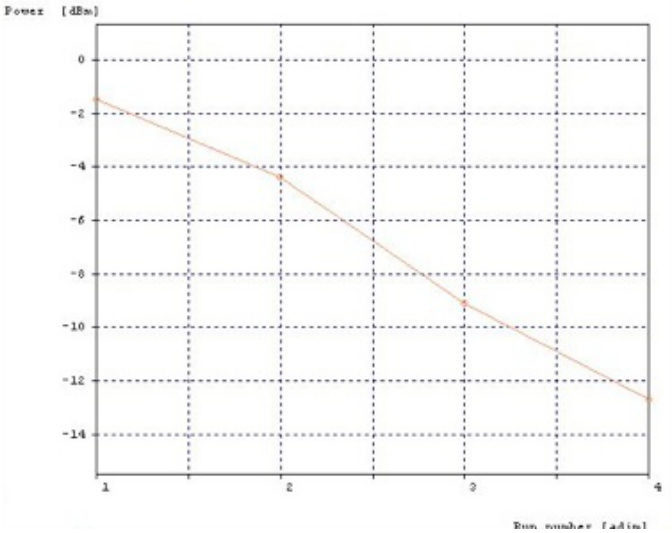


Lab #7. Optical network planning and modeling in Optsim

Correlation diagram of power for the ch 8.



Correlation diagram of power for the ch 16.



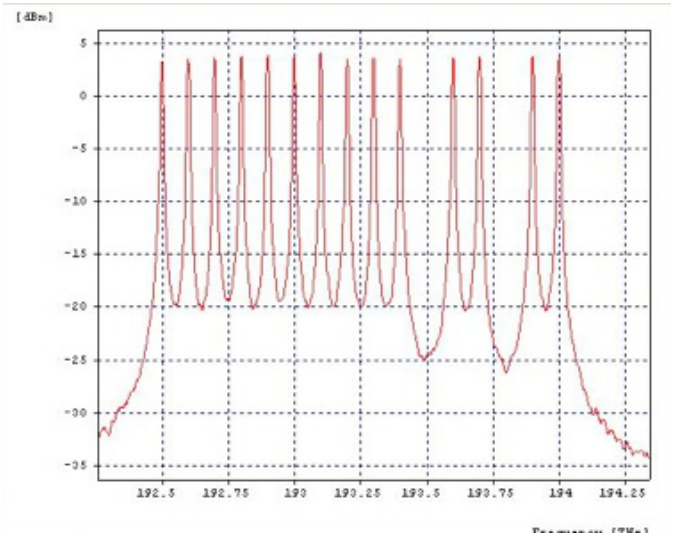
4. Four Wave Mixing (FWM)

Question: For which value of Dispersion is the effect of FWM the most evident?

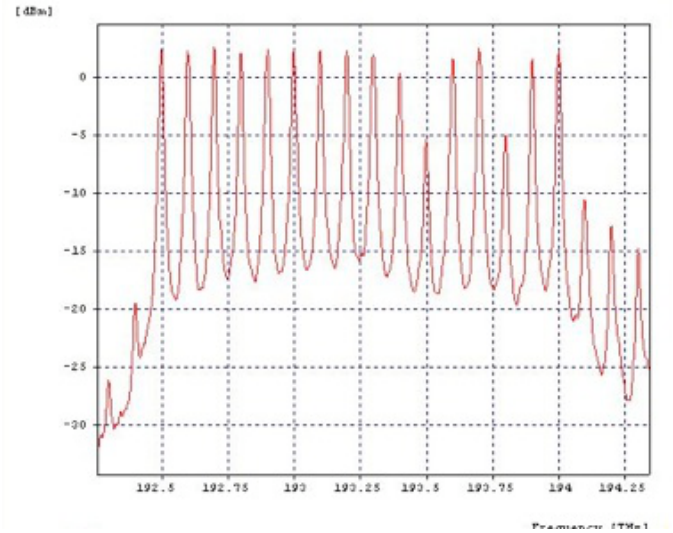
Answer: For small values.

Lab #7. Optical network planning and modeling in Optsim

Input optical spectra:



Output optical spectra:



Correlation diagram of power: