Open Optical Networks - The Transponder

Exercise 1

Update the spectral information and update it.

1. Instantiate a spectral information with the parameters indicated in eqpt.json file

2. Update the spectral information amplifying by 3 dB the power of the signals and adding an ASE noise power per channel equal to -40 dBm and a nli power equal to -43 dBm. To do it use the '._replace()' method of spectral information. You can find the documentation here: https://docs.python.org/3/library/collections.html

3. Plot signal power, ASE noise power and NLI power in the same plot. [x axis: frequency (THz) and y axis: power (dBm)]

1 Exercise 2

Receive signals

- Import transceiver from gnpy.core.elements

- instantiate it calling the constructor with the argument (uid='receiver').

- receive the signals using the transceiver as a function which argument is the spectral information

- Now the transceiver has 'snr', 'osnr_ase' and 'osnr_nli' of the received signal. Plot them in the same graph.[x axis: frequency (THz) and y axis: (dB)]
  Warning: GNPy uses the following nomenclature:
  osnr_ase $= \frac{P_s}{P_{ASE}}$
  osnr_nli $= \frac{P_s}{P_{NLI}}$
  snr $= \frac{P_s}{P_{NLI}+P_{ASE}}$