dBm to mW:

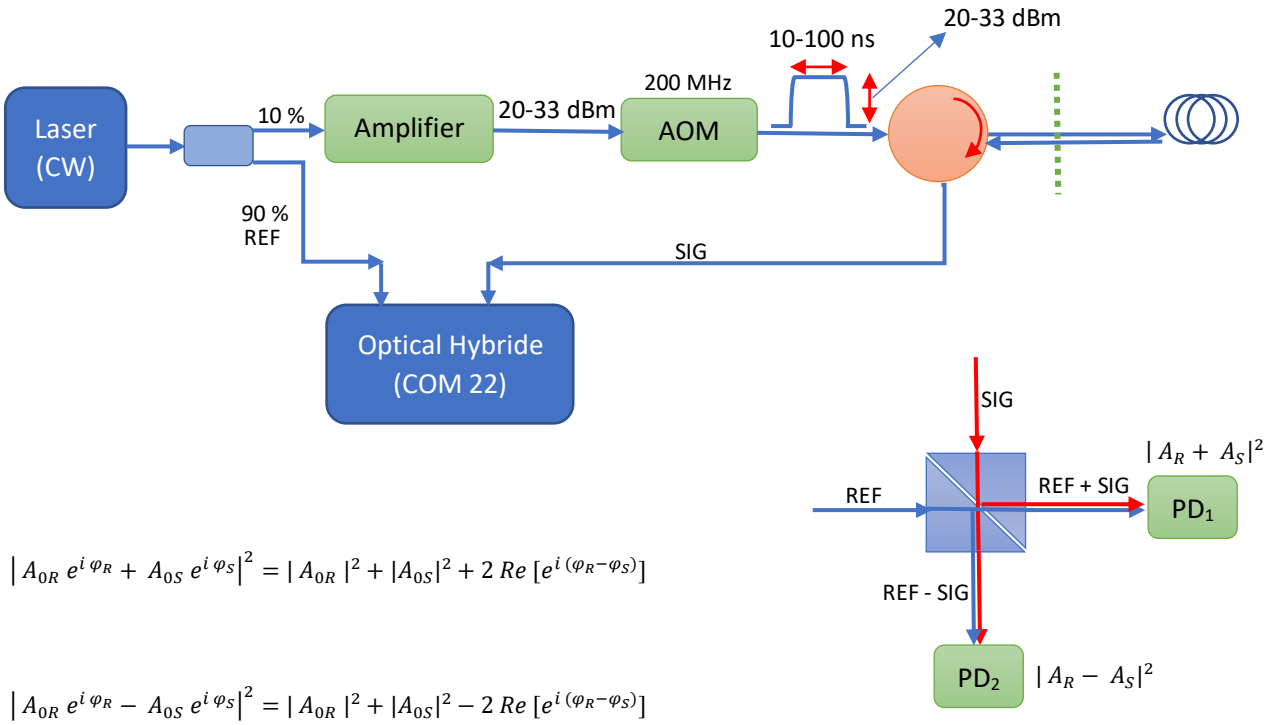
$$P = 10^{\frac{dBm}{10}} \times 1\ mW$$

$$1dBm = 1\ mW, \quad 3\ dBm = 2\ mW, \quad 10\ dBm = 10\ mW, \quad 20\ dBm = 100\ mW$$

Set-up of Acoustic….

We need 10 percent of the laser power to amplify because we need to send it through the fiber, and the 90 percent of the light is near the laser source and we don't need to amplify it. The purpose of these 2 parts of laser power is using the 90 percent of power (without going far from the laser source) and 10 percent of power that goes through the fiber and came back in interferometer.

AOM will put 200 MHz phase shift on the light.



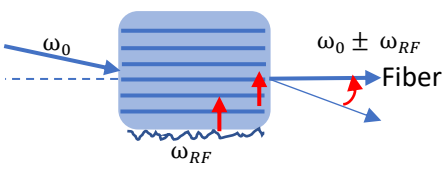
$$\left| A_{0R}\, e^{i\,\varphi_R} + A_{0S}\, e^{i\,\varphi_S} \right|^2 = |A_{0R}|^2 + |A_{0S}|^2 + 2\,Re\,[e^{i\,(\varphi_R - \varphi_S)}]$$

$$\left| A_{0R}\, e^{i\,\varphi_R} - A_{0S}\, e^{i\,\varphi_S} \right|^2 = |A_{0R}|^2 + |A_{0S}|^2 - 2\,Re\,[e^{i\,(\varphi_R - \varphi_S)}]$$

Because just we need the interference part, we eliminate the intensity of REF and SIG parts

$$\left| A_{0R}\, e^{i\,\varphi_R} + A_{0S}\, e^{i\,\varphi_S} \right|^2 - \left| A_{0R}\, e^{i\,\varphi_R} - A_{0S}\, e^{i\,\varphi_S} \right|^2 = 4\,Re\left[e^{i\,(\varphi_R - \varphi_S)}\right] = 4\cos(\varphi_R - \varphi_S) = 4\cos\delta\,\varphi$$

$$\delta\varphi = \omega_{RF} r + \varphi(r)$$



While the radio frequency is on the light can pass through the fiber otherwise it can not pass it. This is the method of creating pulse.