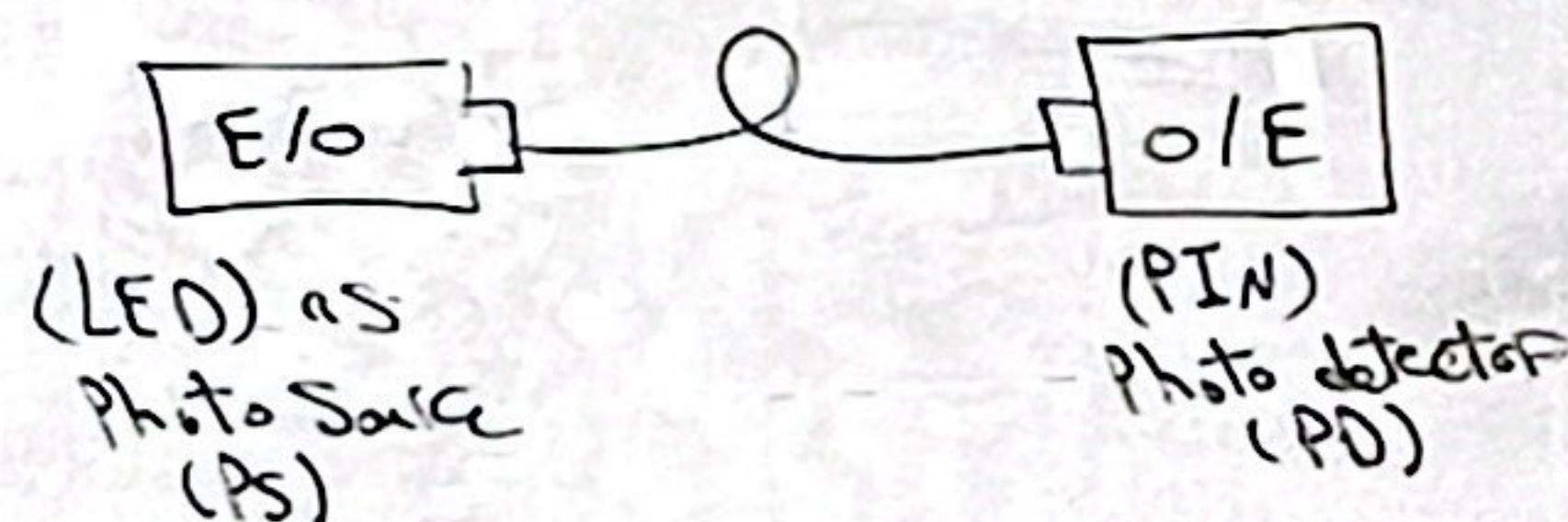


in Emona Fotex kit

- Three Transmitters
 - ② red
 - ① green
- Two receivers



- The type of optical fiber (SMF) single mode fiber with $d_{core} = 100 \mu m$
- The standard type (SMF) $d_{core} = (8-12) \mu m$
- Typical value of fiber loss
 - $\alpha_f = 200 \text{ dB/km} \rightarrow \lambda = 650 \text{ nm}$
 - $\alpha_f = 1500 \text{ dB/km} \rightarrow \lambda = 820 \text{ nm}$

Optical Fiber Loss Calculation

$$\alpha_t = 10 \log \frac{P_1}{P_2} = 20 \log \frac{V_1}{V_2} = 20 \log \frac{I_1}{I_2}$$

Red light wave length

$$\lambda_{red} = 660 \text{ nm}$$

Green light wave length

$$\lambda_{green} = 530 \text{ nm}$$

Visible light range

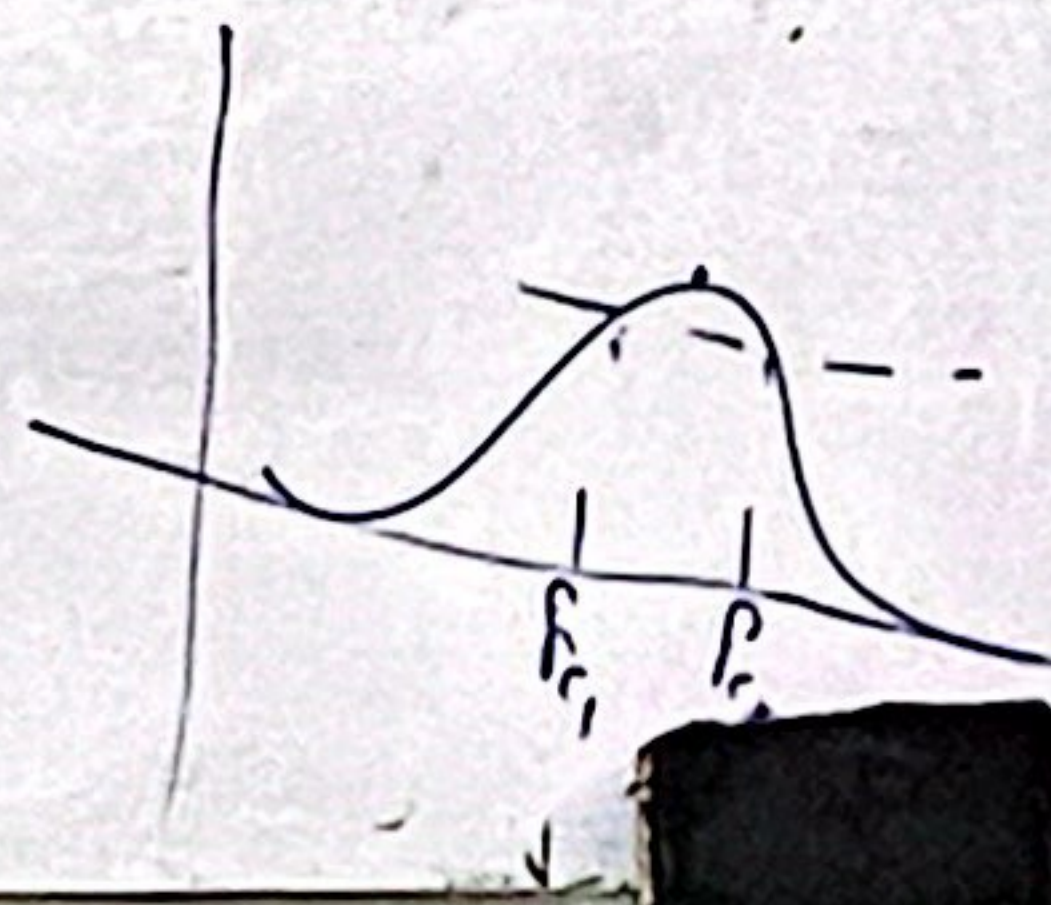
$$(400 \text{ nm} \rightarrow 700 \text{ nm})$$

$$c = \lambda f$$

$3 \times 10^8 \text{ m/sec}$

Infrared (IR) wave length ranges

$$(1300 \text{ nm} \rightarrow 1700 \text{ nm})$$



Optical Fiber Coupler



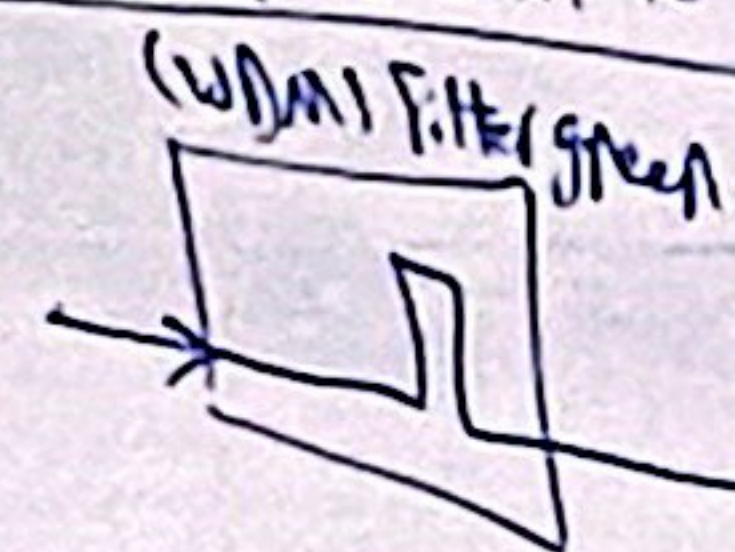
- it has (4-Port) device
- strong Path ($A \rightleftharpoons D$) and from [losses 4.5 dB] ($B \rightleftharpoons C$)
- weak Path ($A \rightleftharpoons C$) and from [losses 6 dB] ($B \rightleftharpoons D$)
- Back reflections ($A \rightarrow B$) and ($C \rightarrow D$) [losses 21 dB]

Splitting: optical signal means a light signal at input (A) is divided and sent to two destination (C) and (D).

Combining: optical signals means two light signals are at inputs (A) and (B) are combined and sent to one destination (D).

Optical (WDM) BPF

Red filter loss = 6 dB
Green filter loss = 7 dB



Red (WDM) BPF filter

losses = 6 dB Pass band

losses = 18 dB Stop band
(all other wavelengths)

Green (WDM) BPF filter

losses = 7 dB Pass band

losses = 18 dB

Stop band

(all other

Wave
lengths)