

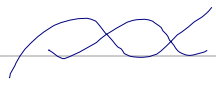
$$i_1 = i_2 + \dots + i_6$$

⇒ too many rx can degrade the quality of signal.

Fig 4.1

Laser light : no different individually from normal light ray,  
the difference is collectively all rays are emitted with  
the same phase.

Infra Red : heat wave.

twisted pair : - cheap, built in during construction.  
- twisted cancel the magnetic force between  
the wire.  → reduce interference.  
- cons : longer wire. } of electrical signal.

Coaxial cable : - Gauss law : inside the complete  
enclosed intersurface, electro magnetic field  
is zero.

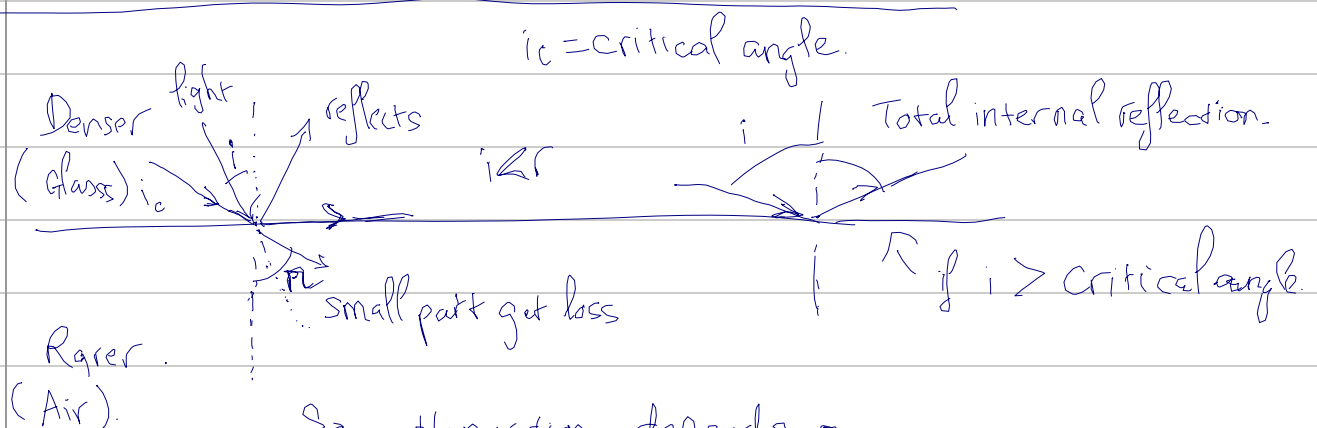
Optical fibre : refer slide

Qn. which freq used for which types of cables

✱ Near End Crosstalk: the signal of Tx cross over to  $R_x$  at one end, and vice versa  $\leftarrow$  part of the twisted pair issues.

Optical fibre

- cladding: trsf medium but not insulator.



So attenuation depends on

- the material of denser, rarer
- the angle  $i > \text{critical angle. (full reflection)}$

Figure 4.6 E/O Conversion: Electrical to optical conversion.

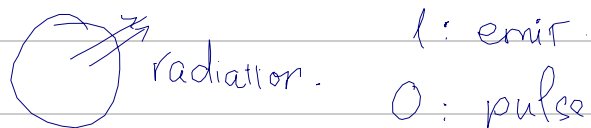


Fig. 7)

a) ~~2500~~ amplitude <sup>intensity</sup> decreases.

- absorption of light.
- the light at center fluctuates more & thus reduce energy.
- spread: because the rays fluctuates  $\rightarrow$  the frequencies spread at the end.

- b). The light at center is controlled to emit slower than the ones on the side.  $\rightarrow$  so they reach at the same time.
- c) not use reflection, make it so thin for hardly no reflection.

Wireless transmission medium