OCR B Physics A-Level

PAG 6.3

Observing polarising effects using microwaves and light

Equipment

- Polarising filters
- Metal grilles
- Microwave detector
- Microwave transmitter

Method

1. For light, hold a polarising filter up to eye level, place another filter behind it and rotate it to observe that when the filters are perpendicular, no light gets through.
2. For microwaves, place a vertically aligned metal grille in front of the transmitter (which transmits vertically plane polarised waves) and the detector behind the grille.
3. To make sure the detector is working and the waves are vertically aligned turn on the transmitter and check the detector receives the waves with and without the grille.
4. Place a horizontally aligned grille behind the first and observe whether the detector records any microwaves.

Safety

- Microwaves can cause burns if their intensity is too high, do not stand in front of the transmitter when it is on.
- Do not look directly into a bright light as it damages eyesight.

Notes

- Only transverse waves can be polarised.
- Reflected light is partially polarised as the light perpendicular to the surface is flipped round when reflected, and destructively interferes with itself, hence polaroid sunglasses reduce glare by blocking light polarised in this orientation.