Radio, microwaves and infrared

Teacher / technician

YEAR 10 / LESSON 62 / PHYSICS + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Conceptual comparison only; no emission, temperature or exposure measurements are claimed.

Coverage and delivery

Shared Physics / Double Award: 3.10–3.13. Electromagnetic spectrum, uses and heating hazards.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Spectrum and application cards	1 set per pair	15 sets
Schematic thermal-image sheet	1 per pair	15
Booklets and calculators	1 each per learner	30 of each

Immediate safety

Paper and diagram activity only. Do not open microwave ovens, test door interlocks, use infrared heaters or concentrate sunlight. No radiation source or deliberate human exposure is part of this lesson.

Preparation and delivery

Read alongside the student method

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1. Prepare 15 original card sets and a clearly labelled schematic thermal image with a scale. Do not present it as a real measurement.

2. Keep heating hazards distinct from ionisation and from the low-power information examples.

Close of lesson

- Return cards and keep corrected spectrum diagrams.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- Radio, microwave, infrared, visible, ultraviolet, X-ray, gamma ray.
- It increases.
- 3.00 m.
- Satellite communication.
- Infrared radiation reaching its detector.
- Internal tissue heating; skin burns from excessive absorbed infrared energy.

References and provenance

Pearson Physics specification

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.