

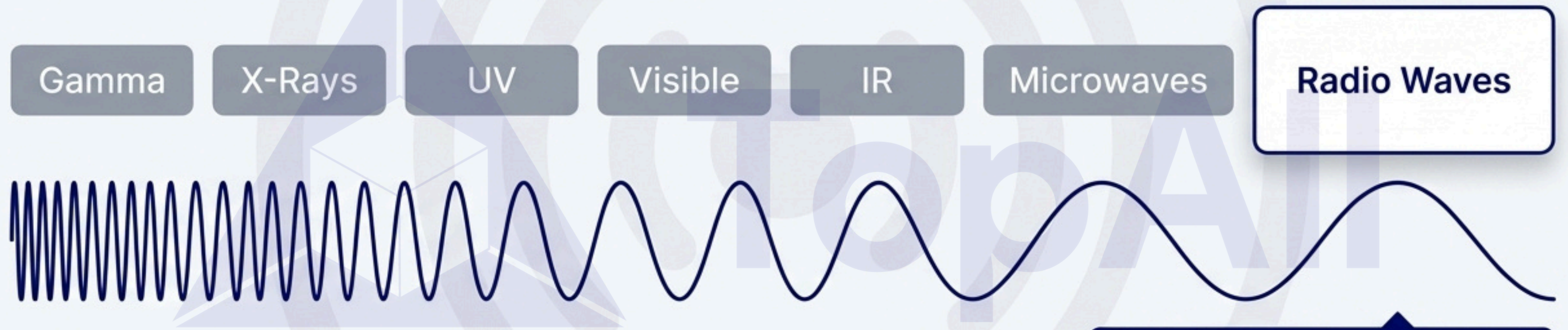
CLASS 12 PHYSICS • SECTION 8.4.1

How Radio Waves Carry Signals Through Air



The Invisible Messengers of the EM Spectrum

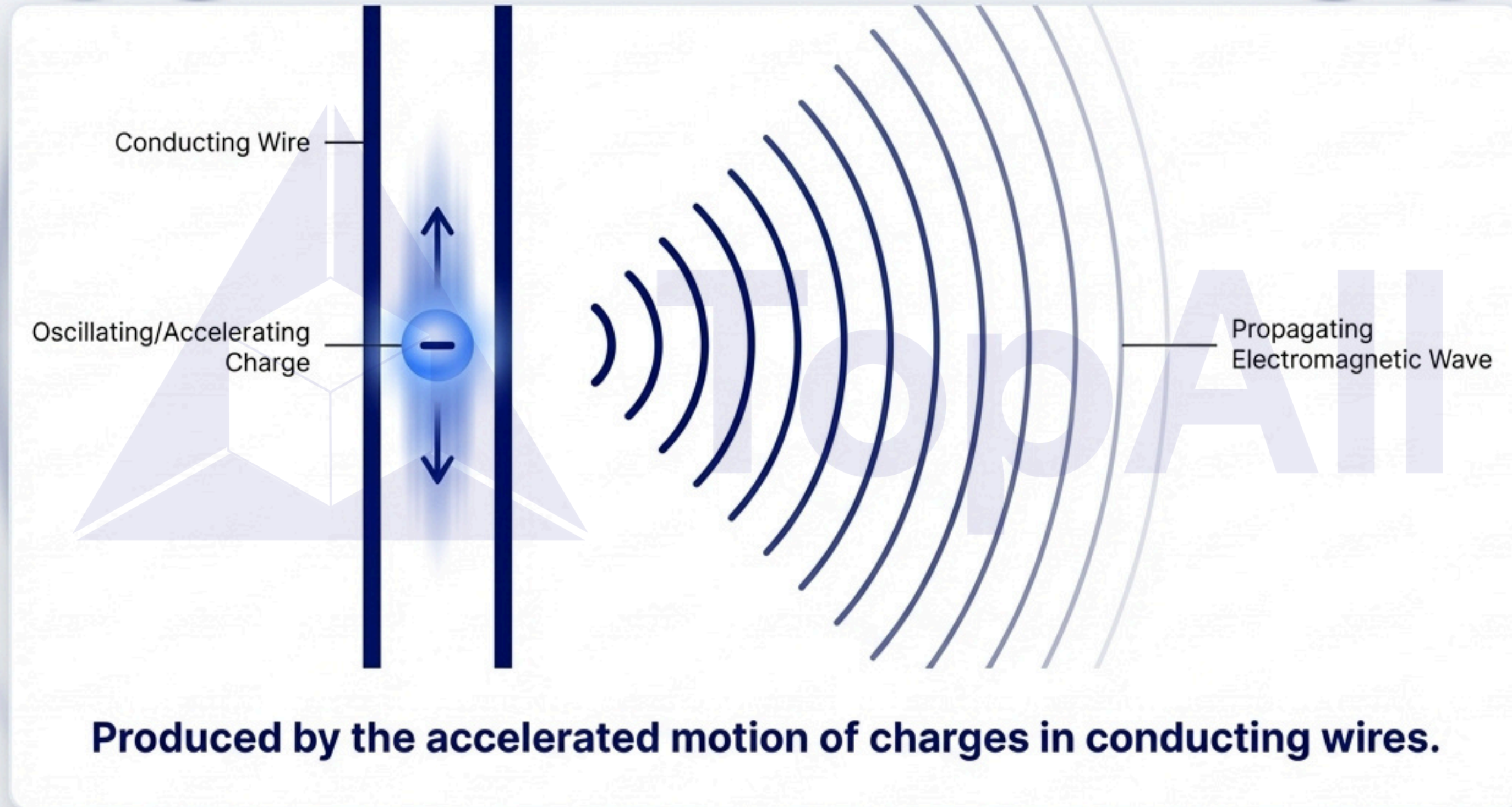
Locating Radio Waves on the EM Spectrum



Wavelength Range: Long

- Sitting at the lowest frequency end of the spectrum.

The Mechanism: Accelerated Charges





You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



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Key Highlights

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The Backbone of Global Communication

General Frequency Band

500 kHz to 1000 MHz

The primary spectrum used
universally for wireless information
transfer.

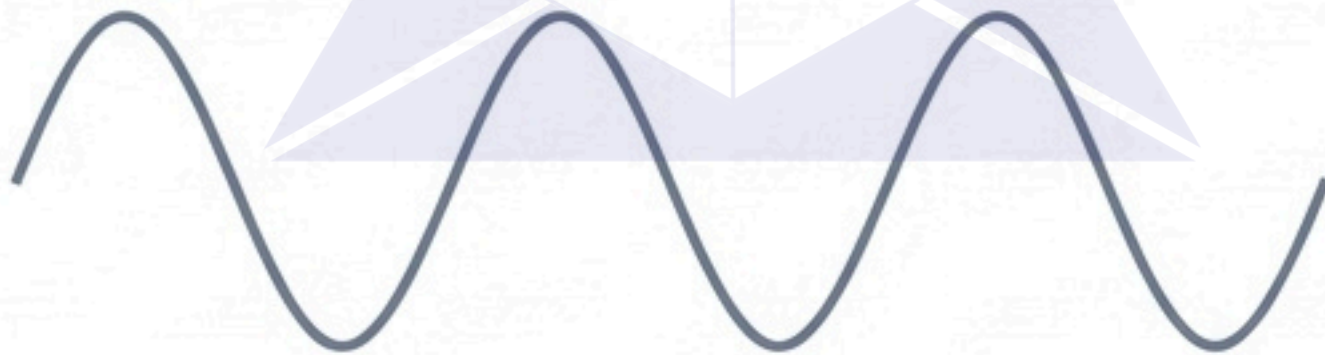


**Essential for Radio and Television
Communication Systems**

Broadcasting Bands: AM vs. FM

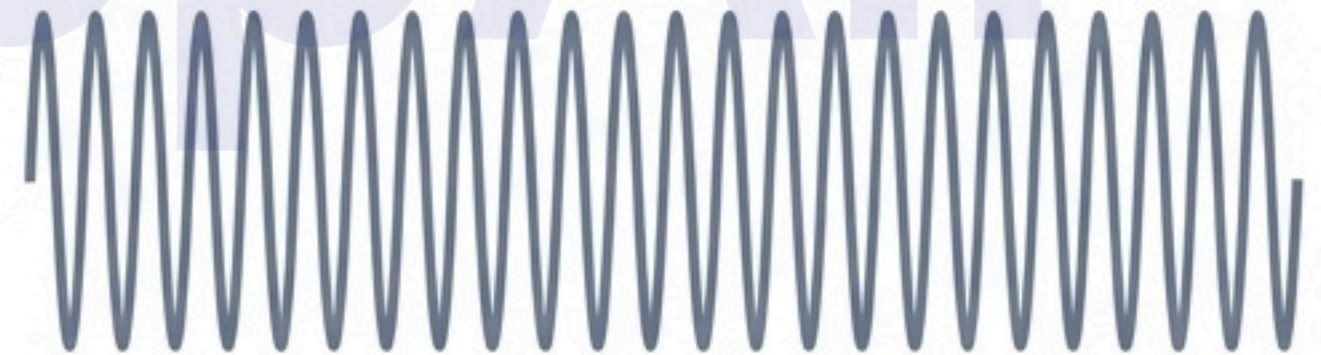
Amplitude Modulated (AM)

530 kHz to 1710 kHz



Frequency Modulated (FM)

88 MHz to 108 MHz



Short Wave Bands: Higher frequencies up to 54 MHz

Higher Frequencies: TV and Cellular



54 MHz to 890 MHz

TV waves utilize wider, higher-frequency regions compared to standard radio.



UHF (Ultrahigh Frequency) Band

Cellular phones use radio waves to transmit voice communication.

Key Takeaways: Radio Waves

- 
- ✓ **Position:** Reside in the long-wavelength region of the EM spectrum.
 - ✓ **Origin:** Produced by the accelerated motion of charges in conducting wires.
 - ✓ **Total Range:** Frequencies span from roughly 500 kHz to 1000 MHz.
 - ✓ **AM Band:** 530 kHz to 1710 kHz.
 - ✓ **FM Band:** 88 MHz to 108 MHz.
 - ✓ **Higher Uses:** TV (54–890 MHz) and Cellular (UHF band) utilize the wider, higher-frequency regions.



You've Learned the Theory.

Now Let's Test It.

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