

## SOURCES, DETECTORS AND USES OF ELECTROMAGNETIC WAVES

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ELECTROMAGNETIC SPECTRUM: THE MEMBERS, IN DECREASING and DECREASING ORDER OF WAVELENGTH AND FREQUENCY RESPECTIVELY IS CODED HERE AS R I V U X - G

R = RADIO WAVES

I= INFRA-RED

V = VISIBLE RAYS (MEMBERS are CODED INTO R O Y G B I V , ALSO IN THE SAME ORDER AS IN ABOVE. R stands for red light, O for Orange, etc.)

U = ULTRA-VIOLET

X = X-RAYS

G= GAMMA RAYS

NOTE: MICROWAVES ARE SHORT WAVELENGTH RADIO WAVES. A separate band may be created for it between radio waves and infrared, but since they are radio waves, such separate band is not necessary.

	waves	sources	detector	uses
1	Radio waves	Radio and TV transmitting antenna, galaxies and stars	Radio aerial	<ul style="list-style-type: none"><li>• Communications through radio and TV</li><li>• Telephone links</li><li>• Microwaves for cooking food</li></ul>
2	Infrared	Hot objects,	<ul style="list-style-type: none"><li>• Special films</li></ul>	<ul style="list-style-type: none"><li>• Infrared remote</li></ul>

		electric fire, the sun	<ul style="list-style-type: none"> <li>• Skin.</li> <li>• Blackened thermometer</li> <li>• Electronic detectors</li> </ul>	<ul style="list-style-type: none"> <li>• control</li> <li>• Heating</li> <li>• Taking temperature picture ( in infrared camera)</li> <li>• In heat therapy for treatment of muscular pains</li> </ul>
3	Visible light	The sun, very hot objects	<ul style="list-style-type: none"> <li>• The eye</li> <li>• Photographic film</li> <li>• electronic detectors</li> </ul>	<ul style="list-style-type: none"> <li>• seeing</li> <li>• photography</li> <li>• photosynthesis</li> <li>• information transmission</li> </ul>
4	Ultraviolet	The Sun, Mercury vapour lamps, electric arcs in welding operation	<ul style="list-style-type: none"> <li>• Photographic film</li> <li>• Electronic detector</li> </ul>	<ul style="list-style-type: none"> <li>• Used in fluorescent lamps</li> <li>• Sterilizing food</li> <li>• Security marking</li> <li>• Used in photosynthesis by flora</li> <li>• To examine eggs in poultry; old eggs glow purple while fresh glow scarlet.</li> </ul>
5	X -rays	X- ray tube	Photographic film	<ul style="list-style-type: none"> <li>• In medical diagnosis( CAT scan)</li> <li>• Medical treatment e.g of cancer</li> <li>• In engineering to know the structure of crystal</li> </ul>
6	Gamma rays	Radioactive materials e.g uranium and cobalt	Photographic film, electronic detector, Geiger- Muller tube	<ul style="list-style-type: none"> <li>• Radiography</li> <li>• Treatment of cancer</li> <li>• Measuring thickness in</li> </ul>

				engineering

Mega Lecture