

Named Bands within the E-M Spectrum

Table 2.1 taken from "Electromagnetic Waves" by INAN & INAN, Prentice Hall.

TABLE 2.1. The electromagnetic spectrum and related applications

Frequency	Designation	Selected applications	Wavelength (in free space)
$> 10^{22}$ Hz	Cosmic rays	Astrophysics	
10^{18} – 10^{22} Hz	γ -rays	Cancer therapy, astrophysics	
10^{16} – 10^{21} Hz	X-rays	Medical diagnosis	
10^{15} – 10^{18} Hz	Ultraviolet	Sterilization	0.3–300 nm
3.95×10^{14} – 7.7×10^{14} Hz	Visible light	Vision, astronomy, optical communications	390–760 nm
		Violet	390–455
		Blue	455–492
		Green	492–577
		Yellow	577–600
		Orange	600–625
		Red	625–760
10^{12} – 10^{14} Hz	Infrared	Heating, night vision, optical communications	3–300 μ m
0.3–1 THz	Millimeter	Astronomy, meteorology	0.3–1 mm
30–300 GHz	EHF	Radar, remote sensing	0.1–1 cm
80–100		W-band	
60–80		V-band	
40–60		U-band	
27–40		K _a -band	
3–30 GHz	SHF	Radar, satellite comm.	1–10 cm
18–27		K-band	
12–18		K _u -band	
8–12		X-band	
4–8		C-band	
0.3–3 GHz	UHF	Radar, TV, GPS, cellular phone	10–100 cm
2–4		S-band	
2.45		Microwave ovens	
1–2		L-band, GPS system	
470–890 MHz		TV Channels 14–83	
30–300 MHz	VHF	TV, FM, police, TV Channels 7–13	1–10 m
174–216		FM radio	
88–108		TV Channels 5–6	
76–88		TV Channels 2–4	
54–72			
3–30 MHz	HF	Short-wave, citizens' band	10–100 m
0.3–3 MHz	MF	AM broadcasting	0.1–1 km
30–300 kHz	LF	Navigation, radio beacons	1–10 km
3–30 kHz	VLF	Navigation, positioning, naval communications	10–100 km
0.3–3 kHz	ULF	Telephone, audio	0.1–1 Mm
30–300 Hz	SLF	Power transmission, submarine communications	1–10 Mm
3–30 Hz	ELF	Detection of buried metals	10–100 Mm
< 3 Hz		Geophysical prospecting	> 100 Mm

Taken from "Antennas for all Applications" by Kraus & Marhefka, McGraw Hill

UHF	300–3000 MHz	TV, LAN, cellular, GPS
SHF	3–30 GHz	Radar, GSO satellites, data
EHF	30–300 GHz	Radar, automotive, data

Microwave bands		
"Old"	"New"	Frequency
L	D	1–2 GHz
S	E, F	2–4 GHz
C	G, H	4–8 GHz
X	I, J	8–12 GHz
Ku	J	12–18 GHz
K	J	18–26 GHz
Ka	K	26–40 GHz