

**ELECTROMAGNETIC FREQUENCY/
WAVELENGTH BANDS¹⁰**

Designation	Frequency Range		Wavelength Range	
	Lower	Upper	Lower	Upper
ULF*		30 Hz	10 Mm	
VF*	30 Hz	300 Hz	1 Mm	10 Mm
ELF	300 Hz	3 kHz	100 km	1 Mm
VLF	3 kHz	30 kHz	10 km	100 km
LF	30 kHz	300 kHz	1 km	10 km
MF	300 kHz	3 MHz	100 m	1 km
HF	3 MHz	30 MHz	10 m	100 m
VHF	30 MHz	300 MHz	1 m	10 m
UHF	300 MHz	3 GHz	10 cm	1 m
SHF†	3 GHz	30 GHz	1 cm	10 cm
S	2.6	3.95	7.6	11.5
G	3.95	5.85	5.1	7.6
J	5.3	8.2	3.7	5.7
H	7.05	10.0	3.0	4.25
X	8.2	12.4	2.4	3.7
M	10.0	15.0	2.0	3.0
P	12.4	18.0	1.67	2.4
K	18.0	26.5	1.1	1.67
R	26.5	40.0	0.75	1.1
EHF	30 GHz	300 GHz	1 mm	1 cm
Submillimeter	300 GHz	3 THz	100 μ m	1 mm
Infrared	3 THz	430 THz	700 nm	100 μ m
Visible	430 THz	750 THz	400 nm	700 nm
Ultraviolet	750 THz	30 PHz	10 nm	400 nm
X Ray	30 PHz	3 EHz	100 pm	10 nm
Gamma Ray	3 EHz			100 pm

In spectroscopy the angstrom is sometimes used ($1\text{\AA} = 10^{-8}\text{ cm} = 0.1\text{ nm}$).

*The boundary between ULF and VF (voice frequencies) is variously defined.

†The SHF (microwave) band is further subdivided approximately as shown.¹¹