

FREQUENCY NOMENCLATURE:

Kilohertz to Terahertz

IEEE BAND ALLOCATIONS *1

BAND	f	λ
HF	3MHz	100m
VHF	30MHz	10m
UHF	300MHz	1m
L	1GHz	300mm
S	2GHz	150mm
C	4GHz	75mm
X	8GHz	37.5mm
Ku	12GHz	25mm
K	18GHz	16.7mm
Ka	27GHz	11.1mm
V	40GHz	7.5mm
W	75GHz	4mm
mm	110GHz	2.73mm

EU-NATO- US ECM BANDS *2

BAND	f	λ
A	0 GHz	0.0m
B	.25 GHz	1.2m
C	.5 GHz	0.6m
D	1GHz	300mm
E	2GHz	150mm
F	3GHz	100mm
G	4GHz	75mm
H	6GHz	50mm
I	8GHz	37.5mm
J	10GHz	30mm
K	20GHz	15mm
L	40GHz	7.5mm
M	60GHz	5mm

ITU BAND ALLOCATIONS *3

BAND	f	λ
4	3kHz	100km
5	30kHz	10km
6	300kHz	1km
7	3MHz	100m
8	30MHz	10m
9	300MHz	1m
10	3GHz	100mm
11	30GHz	10mm
12	300GHz	1mm

*1 The Institute of Electrical and Electronics Engineers (IEEE) uses band designations derived from early military use, and has adapted its nomenclature for higher frequency regimes.

*2 The European Union (EU), North Atlantic Treaty Organization (NATO), and some United States Electronic Countermeasures (ECM) companies use a band designations using the letters "A" through "M".

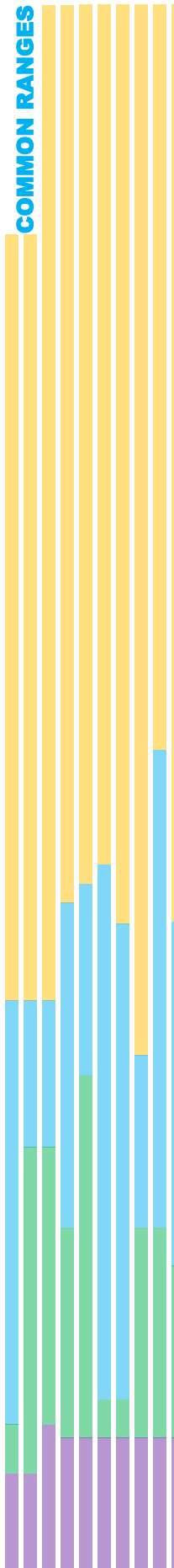
*3 The International Telecommunications Union uses numbered band designations from 4 through 12 that is based upon the decades of the relevant electromagnetic radiation wavelengths for radio operation.

*4 The "Common Ranges" section is taken from leading informational sources on Microwaves/RF, as well as company websites from product definitions.

See MWRF References and Tools piece titled, "Frequency Spectrum", for more details on the electromagnetic spectrum.

Decade Designations	Frequency	Wavelength
VLF	3 kHz	100 km
	6 kHz	50 km
	9 kHz	33.3 km
	12 kHz	25 km
	15 kHz	20 km
	18 kHz	16.7 km
	21 kHz	14.3 km
	24 kHz	12.5 km
	27 kHz	11.1 km
	30 kHz	10 km
LF	60 kHz	5 km
	90 kHz	3.33 km
	120 kHz	2.5 km
	150 kHz	2 km
	180 kHz	1.67 km
	210 kHz	1.43 km
	240 kHz	1.25 km
	270 kHz	1.11 km
	300 kHz	1 km
	MF	600 kHz
900 kHz		333 m
1200 kHz		250 m
1500 kHz		200 m
1800 kHz		167 m
2100 kHz		143 m
2400 kHz		125 m
2700 kHz		111 m
3000 kHz		100 m
HF		6 MHz
	9 MHz	33.3 m
	12 MHz	25 m
	15 MHz	20 m
	18 MHz	16.7 m
	21 MHz	14.3 m
	24 MHz	12.5 m
	27 MHz	11.1 m
	30 MHz	10 m
	VHF	60 MHz
90 MHz		3.33 m
120 MHz		2.5 m
150 MHz		2 m
180 MHz		1.67 m
210 MHz		1.43 m
240 MHz		1.25 m
270 MHz		1.11 m
300 MHz		1 m
UHF		600 MHz
	900 MHz	333 mm
	1200 MHz	250 mm
	1500 MHz	200 mm
	1800 MHz	167 mm
	2100 MHz	143 mm
	2400 MHz	125 mm
	2700 MHz	111 mm
	3000 MHz	100 mm
	SHF	6 GHz
9 GHz		33.3 mm
12 GHz		25 mm
15 GHz		20 mm
18 GHz		16.7 mm
21 GHz		14.3 mm
24 GHz		12.5 mm
27 GHz		11.1 mm
30 GHz		10 mm
EHF		60 GHz
	90 GHz	3.33 mm
	120 GHz	2.5 mm
	150 GHz	2 mm
	180 GHz	1.67 mm
	210 GHz	1.43 mm
	240 GHz	1.25 mm
	270 GHz	1.11 mm
	300 GHz	1 mm
	THF-FIR	600 GHz
900 GHz		333 um
1200 GHz		250 um
1500 GHz		200 um
1800 GHz		167 um
2100 GHz		143 um
2400 GHz	125 um	
2700 GHz	111 um	
3000 GHz	100 um	

COMMON RANGES



BY WAVELENGTH



BY FREQUENCY



LEGEND

Spectrum
 #1 U1 #3 U3
 #2 U2 #4 U4

#1 & #2:
 Frequencies
 U1 & U2:
 Frequency Units
 #3 & #4:
 Wavelengths
 U3 & U4:
 Wavelength Units

Decades

VLF
 Very Low Frequency

LF
 Low Frequency

MF
 Medium Frequency

HF
 High Frequency

VHF
 Very High Frequency

UHF
 Ultra High Frequency

SHF
 Super High Frequency

EHF
 Extremely High Frequency

THF-FIR
 Tremendously High Frequency – Far Infrared

Common Ranges

Radio Frequency

Microwaves

Millimeter-Waves

Terahertz

By Frequency

Kilometer-Waves (k-waves)

Meter-Waves (m-Waves)

Millimeter-Waves (mm-Waves)

Micrometer-Waves (um-Waves)

By Wavelength

Kilohertz-Waves (Kilo-Waves)

Gigahertz-Waves (Giga-Waves)

Megahertz-Waves (Mega-Waves)

Terahertz-Waves (Tera-Waves)