

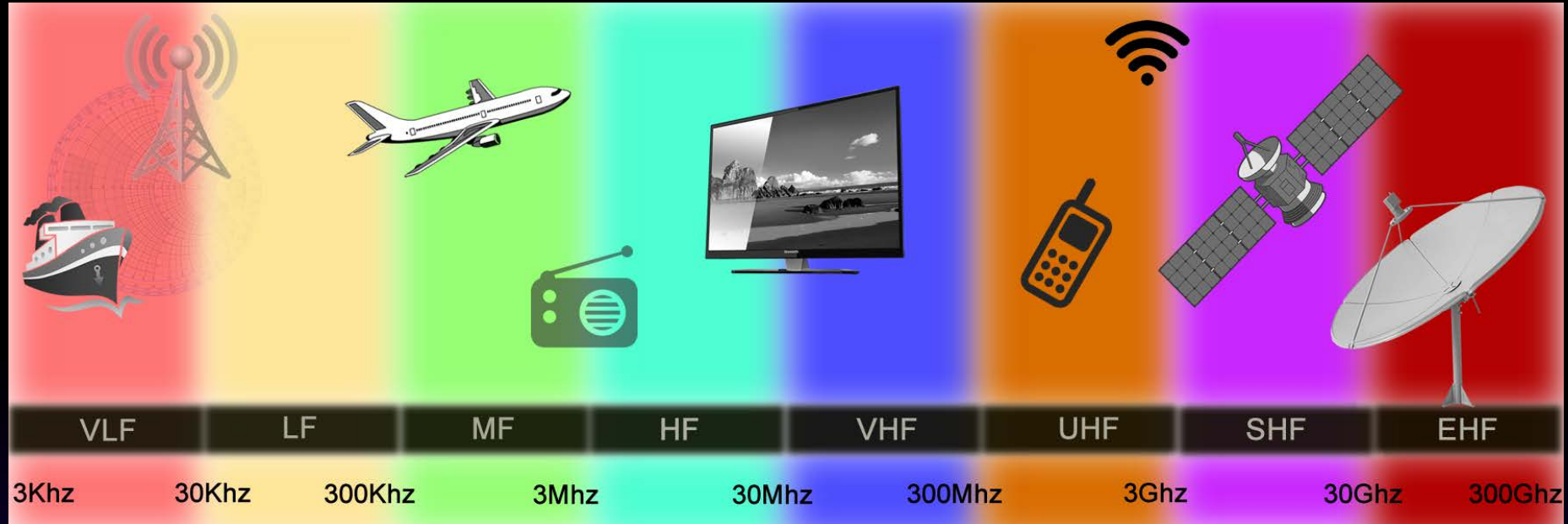


Software Defined Radio

Ethical Hackers Security Researchers

3.0v

Radio Frequency Spectrum

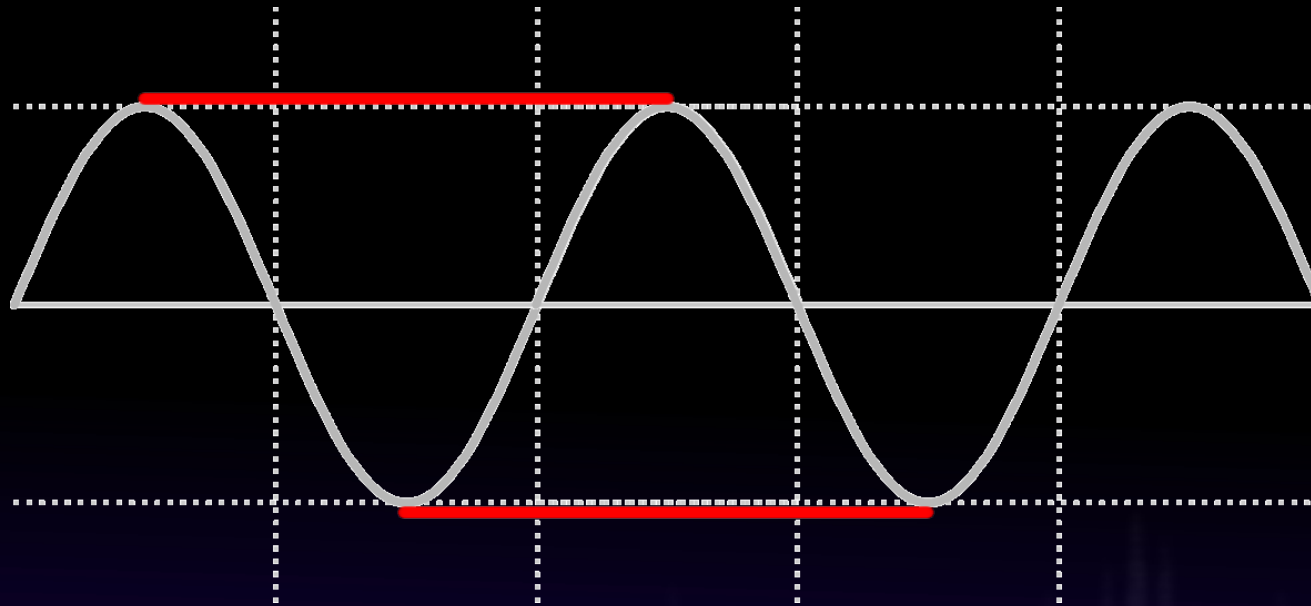


The radio spectrum is the part of the electromagnetic spectrum with frequencies from 3Khz to 300Ghz.

Radio Frequency Spectrum Ranges

Designation	Abbreviation	Frequencies	Wavelength
Very Low Frequency	VLF	3Khz – 30Khz	100 km – 10 km
Low Frequency	LF	30Khz - 300Khz	10 km – 1 km
Medium Frequency	MF	300Khz – 3Mhz	1 km – 100m
High Frequency	HF	3Mhz – 30Mhz	100m – 10m
Very High Frequency	VHF	30Mhz – 300Mhz	10m – 1m
Ultra High Frequency	UHF	300Mhz – 3Ghz	1m – 100mm
Super High Frequency	SHF	3Ghz – 30Ghz	100 mm – 10mm
Extremely High Frequency	EHF	30Ghz – 300Ghz	10 mm – 1mm

What is Wavelength



Wavelength is the distance between two peaks or troughs

Radio Frequency Spectrum Ranges

Very Low frequency VLF

It has been using in submarines and still used in time radio station which synchronizes clock signals between two remote locations.

Low frequency LF

It is suitable for long distance communication. Use in long wave AM broadcasting.

Radio Frequency Spectrum Ranges

Medium Frequency MF

Medium frequency was one of the most popular frequency bands since the beginning of wireless radio transmission in the early nineteenth century. Use in AM medium wave broadcasting, amateur radio.

High Frequency HF

This frequency band is also known as short wave. Use in Short wave broadcasting, amateur and civic radio, flight communications

Radio Frequency Spectrum Ranges

Very High Frequency VHF

VHF frequency is widely used in analog TV broadcasting since it has started few decades back. FM radio broadcasting at 88 MHz to 108 MHz operates in VHF frequency band.

Radio Frequency Spectrum Ranges

Ultra High Frequency UHF

It has many sub frequency bands, some are restricted and assigned only for particular applications. It is used in GPS navigation systems, satellites, pagers, Wi-Fi, Bluetooth, television broadcasting, and most importantly GSM, CDMA and LTE mobile transmission.

Radio Frequency Spectrum Ranges

Super High Frequency SHF

It can only operate in line-of-sight path since any obstruction in between the transmitter and receiving station will break the communication. It is commonly used in point-to-point communication, satellite systems, digital TV broadcasting , Wi-Fi (5GHz channel), microwave ovens and mobile networks.

Radio Frequency Spectrum Ranges

Extremely High Frequency EHF

EHF is only used in advanced communication systems due to its complex nature and line of sight requirement. It is suggested to use for high speed internet systems like 5G technology for future transmission networks due to large bandwidth availability.