

FREQUENCY SPECTRUM

NAME Range	RANGE NAME Hz	λ km	APPLICATION
ELF	3 Hz - 3 K		Seismic study (no earth atmosphere study). Highly vulnerable ELF
VLF	3 K - 30 K	100 - 10 km	
LF	30 K - 300 K	10 K - 1 km	
MF	300 K - 3 MHz	1 K - 100 m	
HF	3 M - 30 MHz	100 m - 10 m	baric
VHF	30 M - 300 MHz	10 m - 1 m	L (1-2) GHz
UHF	300 M - 3 GHz	1 m - 100 mm	S (2-4) GHz
SHF	3 G - 30 GHz	100 mm - 10 mm	C (4-8) GHz
EHF	30 GHz - 300 GHz	10 mm - 1 mm	X (8-12) GHz
			Ku (12-18) GHz
C Band	no problem with Rain		K (18-26) GHz
Extended C-Band	no problem clouds		Ka (26-40) GHz
Ku-band	High speed data, problem with clouds.		Q V (40-75) GHz
			W (75-110) GHz

Q. Adv. and cons of various Bands?
 as freq. increased - data rate increased,
 antenna size reduced, Fading increased to Rain.

(3 Hz - 3 K Hz) Maritime Radio Navigation.
 ELF: extremely low frequency. Highly vulnerable to disturbance easily gets distorted in atmosphere. Hard to design a system in this range. Larger wavelength requires longer antenna i.e. not feasible.

VLF (3K-30 KHz) Starting of Radiowaves & practical Radio transmission. Design and implementation of antenna system is extremely complicated due to (λ) .

used - in submarine, at radio stations which synchronizes clock signals between two remote location.

LF - Maritime, Navigation.

LF 30K-300 KHz. Signals reflected from earth ionosphere, suitable for long distance communication. Less attenuation from big terrains like mountains. called ground waves. used in Amature Radio.

During Natural Disasters when other communication fails LF signal communication is most important to convey informations. military app.

RFID tags. LF Radio broadcasting.

RFID tags used at airports to sort cargo.

in vehicle Registration. in stolen car identification.

MF - AM Radio. Aviation Radio. Navigation.

MF 300K-3MHz. wireless transmission 19th century used in MF Radio Stations. Navigation for ships and aircraft. coast guards. in emergency distress signals.

HF - shortwave broadcast Amature Radio. NFC, Aviation.

HF 3m-30 MHz. Shortwave (SW). reflected from earth's ionosphere used in long distance comm. used by Aviation Industry. NFC near field Comm. weather broadcasting. Govt. systems, Amature Radio.

VHF - 30m-300 MHz. λ (10m-1m).

application FM Radio, VHF Television.