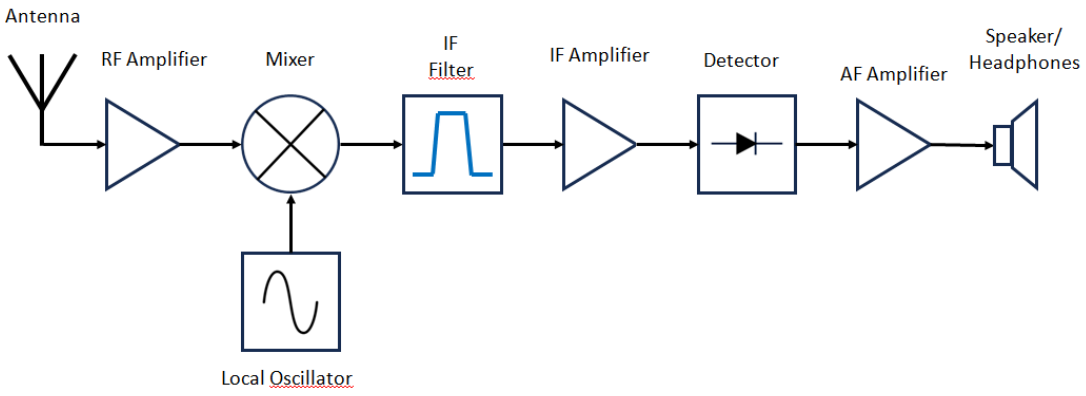
Amateur Basic – Formulas and Block Diagrams – for training purposes only

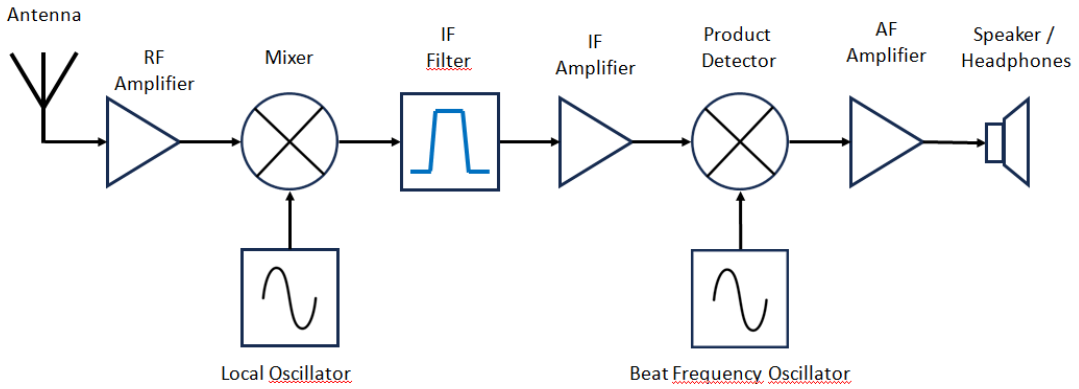
Version 1 (May 2025). This material is **not** permitted for use during any examination.

Formula	Application
$F = \frac{300}{\lambda}$	Calculation of frequency in MHz (F) for a known wavelength (λ)
$\lambda = \frac{300}{F}$	Calculation of wavelength (λ) for a known frequency in MHz (F)
$L = \frac{306}{F}$	Antennas: Length of a wire delta or quad loop in metres for a known frequency
$L = \frac{142}{F}$	Antennas: Length of a half-wave wire in metres for a known frequency
$L = \frac{71}{F}$	Antennas: Length of a quarter-wave wire in metres for a known frequency
$E = I \text{ x } R$	Ohm's Law for voltage (E), current (I) and resistance (R)
$I = \frac{E}{R}$	Ohm's Law for current (I), voltage (E) and resistance (R)
$R = \frac{E}{I}$	Ohm's Law for resistance (R), current (I) and voltage (E)
$P = I \text{ x } E$	Ohm's Law for power (P), current (I) and voltage (E)
$I = \frac{P}{E}$	Ohm's Law for current (I), power (P) and voltage (E)
$E = \frac{P}{I}$	Ohm's Law for voltage (E), current (I) and power (P)
$R_t = R_1 + R_2 + R_3 \ldots + R_n$	Total value of resistances in series
$C_t = C_1 + C_2 + C_3 \ldots + C_n$	Total value of capacitors in parallel
$L_t = L_1 + L_2 + L_3 \ldots + L_n$	Total value of inductances in series
$\frac{1}{R_t} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \ldots + \frac{1}{R_n}$	Total value of resistances in parallel
$\frac{1}{C_t} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} \ldots + \frac{1}{C_n}$	Total value of capacitors in series
$\frac{1}{L_t} = \frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3} \ldots + \frac{1}{L_n}$	Total value of inductances in parallel

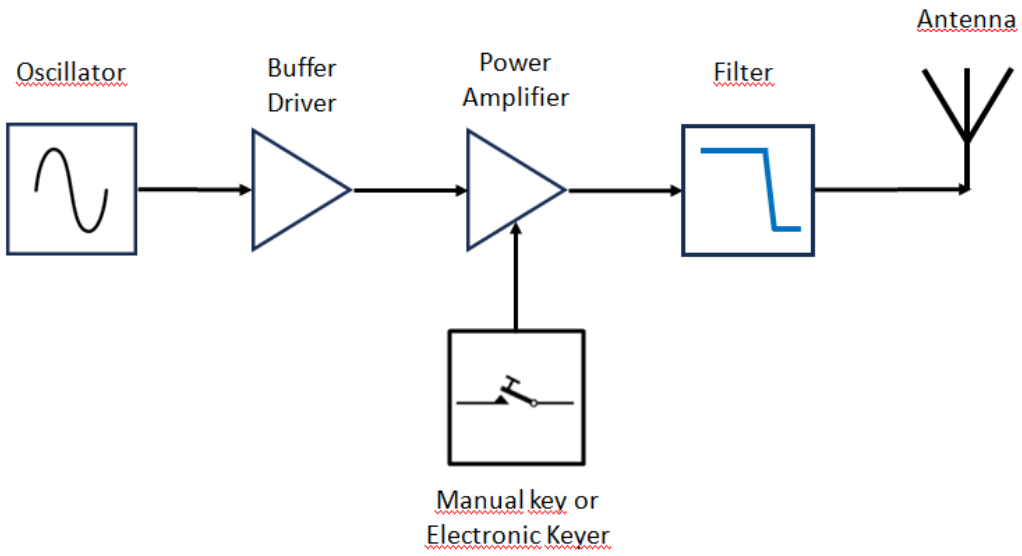
Superheterodyne AM Receiver



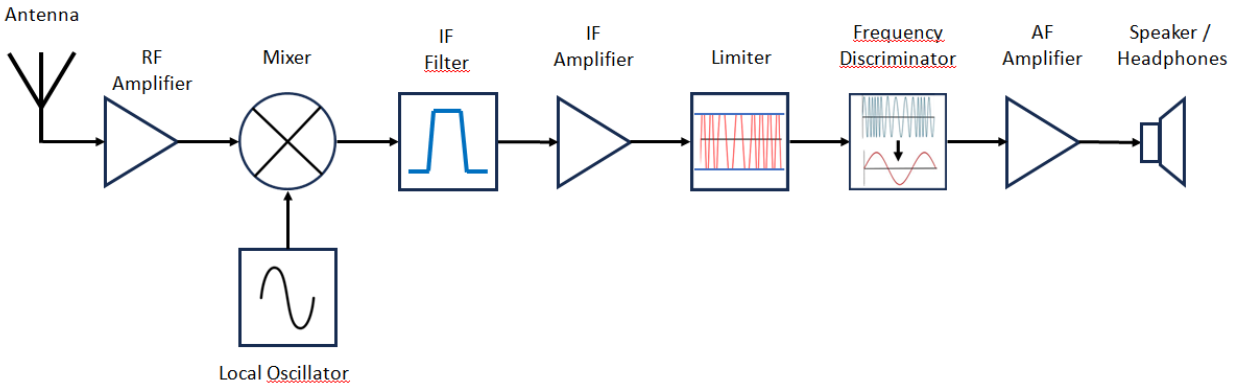
Superheterodyne SSB/CW Receiver



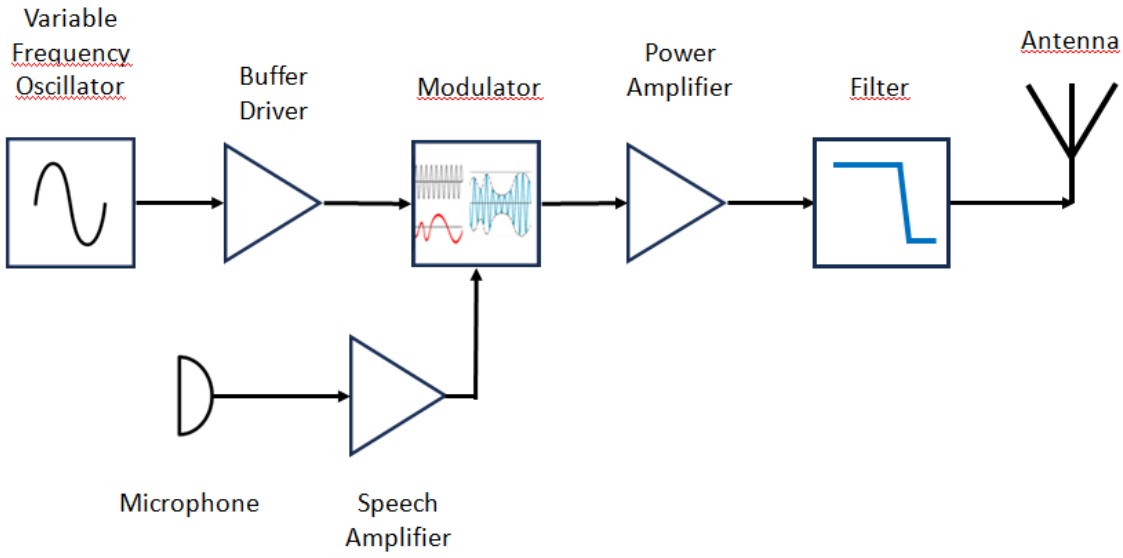
CW Transmitter



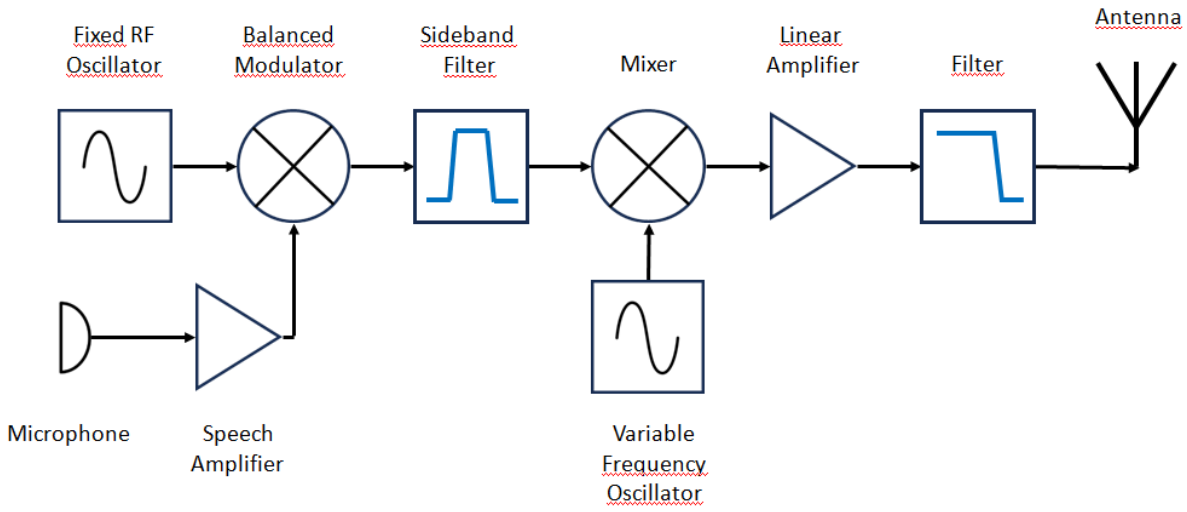
Superheterodyne FM Receiver



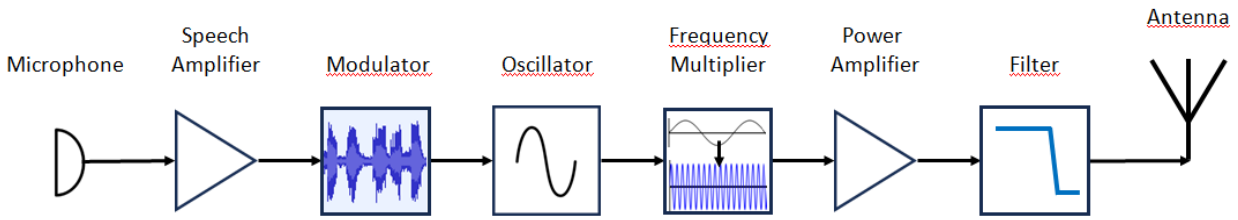
AM Transmitter



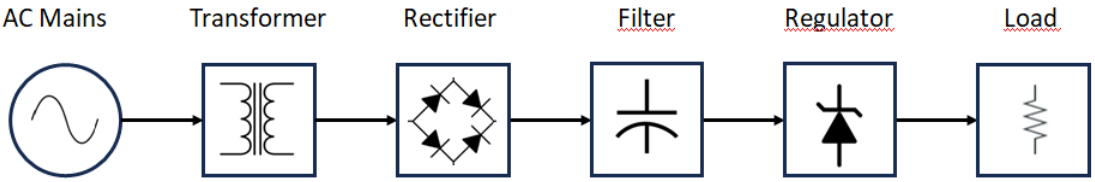
SSB Transmitter



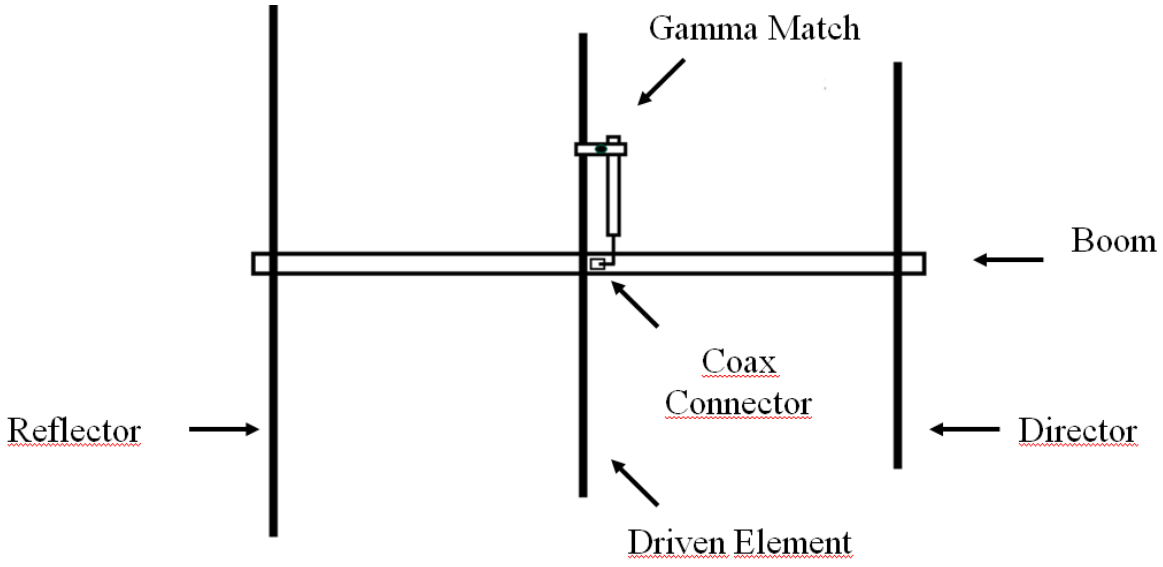
FM Transmitter



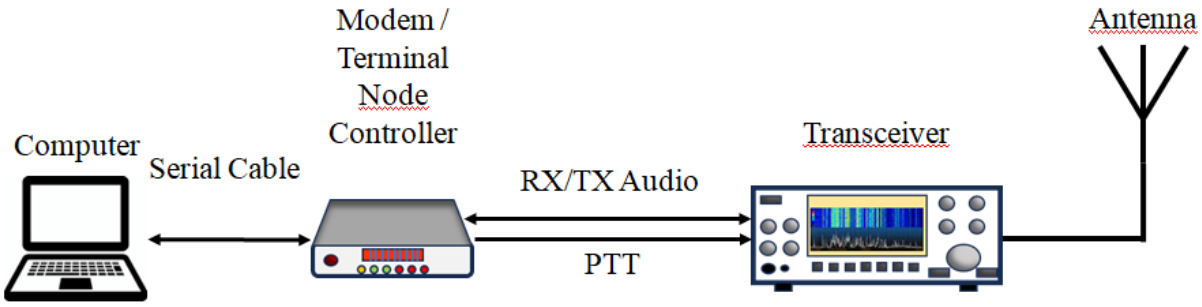
Linear Regulated Power Supply



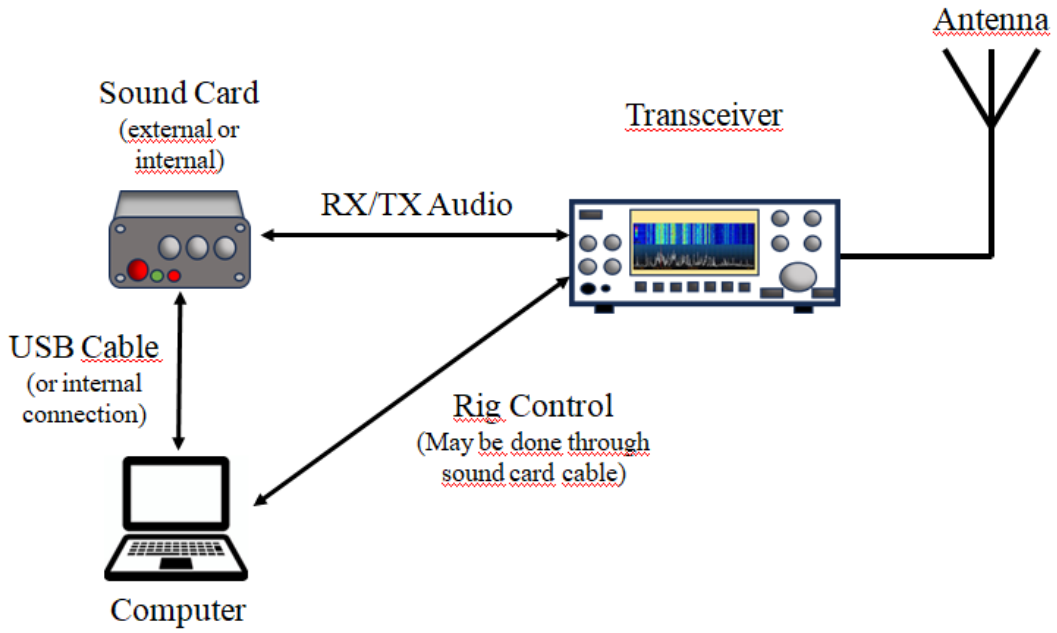
Yagi-Uda Antenna



Legacy Digital Modes



Current Digital Modes



Typical HF Installation