



Reference material — Basic Qualification

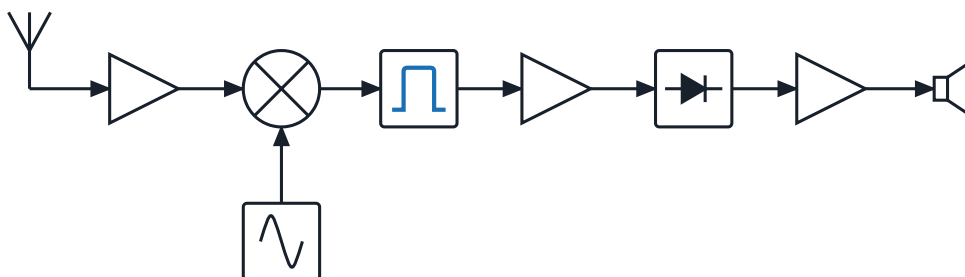
Formulas and block diagrams of the ISED reference material (May 2025), without block names, as on the sheet allowed during the Basic Qualification exam. Check with your examiner which version they provide.

Formulas

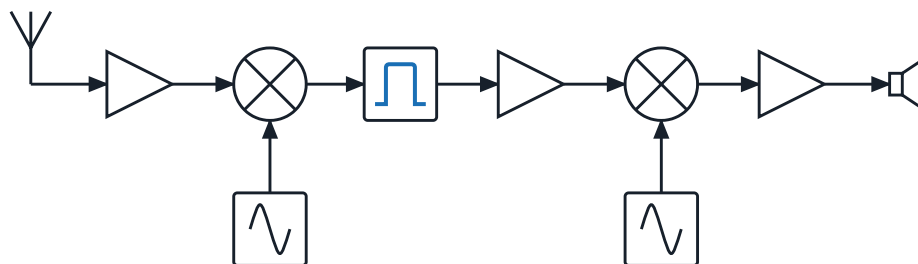
$F = \frac{300}{\lambda}$	Frequency in MHz (F) from a known wavelength in metres (λ)
$\lambda = \frac{300}{F}$	Wavelength in metres (λ) from a known frequency in MHz (F)
$L = \frac{306}{F}$	Antennas: length in metres of a wire delta or quad loop
$L = \frac{142}{F}$	Antennas: length in metres of a half-wave wire
$L = \frac{71}{F}$	Antennas: length in metres of a quarter-wave wire
$E = I \times R$	Ohm's Law: voltage (E), current (I), resistance (R)
$I = \frac{E}{R}$	Ohm's Law: current
$R = \frac{E}{I}$	Ohm's Law: resistance
$P = I \times E$	Power (P) from current and voltage
$I = \frac{P}{E}$	Current from power and voltage
$E = \frac{P}{I}$	Voltage from power and current
$R_t = R_1 + R_2 + \dots + R_n$	Resistances in series
$C_t = C_1 + C_2 + \dots + C_n$	Capacitors in parallel
$L_t = L_1 + L_2 + \dots + L_n$	Inductances in series
$\frac{1}{R_t} = \frac{1}{R_1} + \frac{1}{R_2} + \dots + \frac{1}{R_n}$	Resistances in parallel
$\frac{1}{C_t} = \frac{1}{C_1} + \frac{1}{C_2} + \dots + \frac{1}{C_n}$	Capacitors in series
$\frac{1}{L_t} = \frac{1}{L_1} + \frac{1}{L_2} + \dots + \frac{1}{L_n}$	Inductances in parallel

Block diagrams

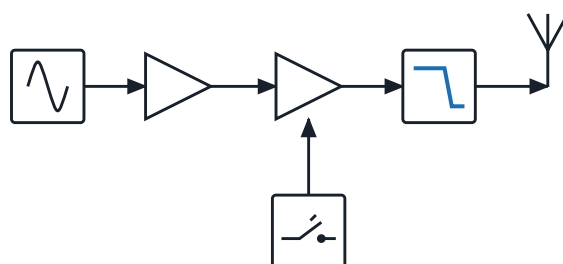
Superheterodyne AM Receiver



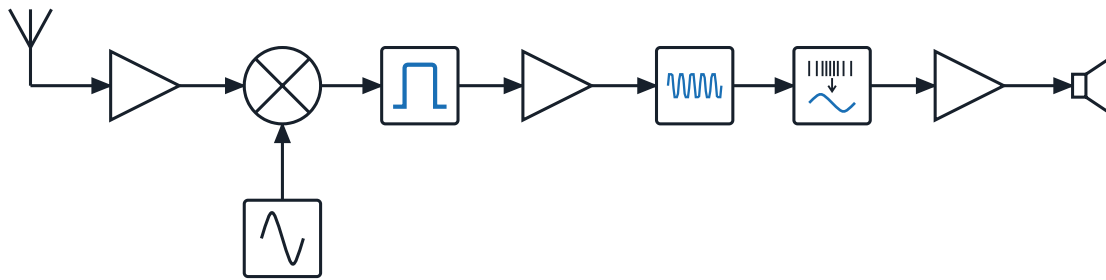
Superheterodyne SSB/CW Receiver



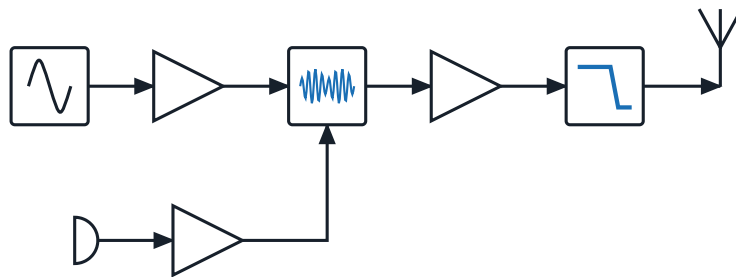
CW Transmitter



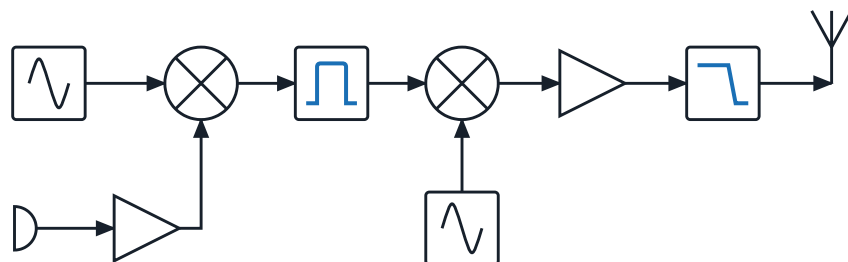
Superheterodyne FM Receiver



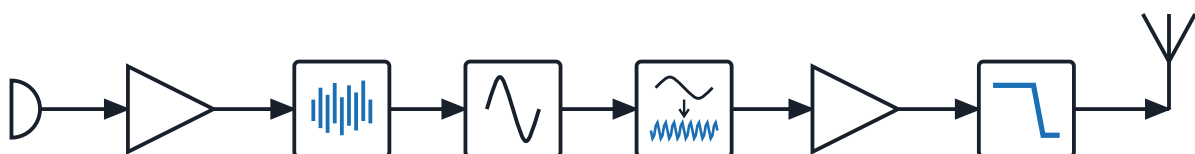
AM Transmitter



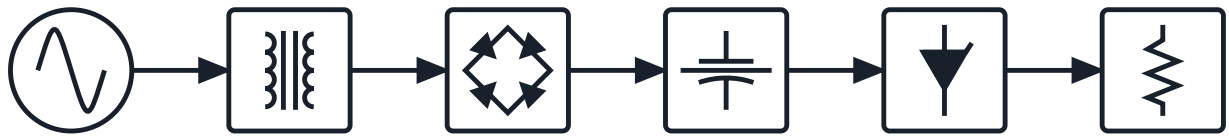
SSB Transmitter



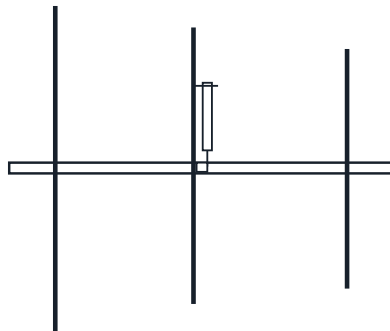
FM Transmitter



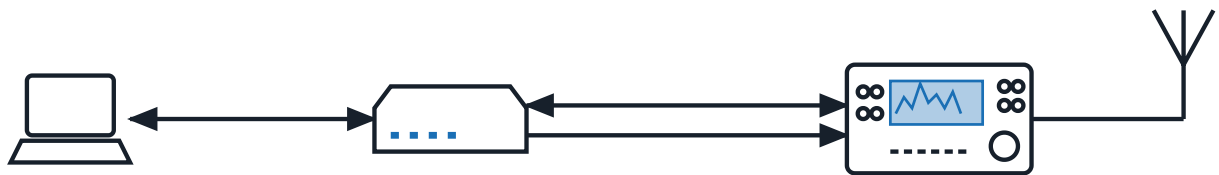
Linear Regulated Power Supply



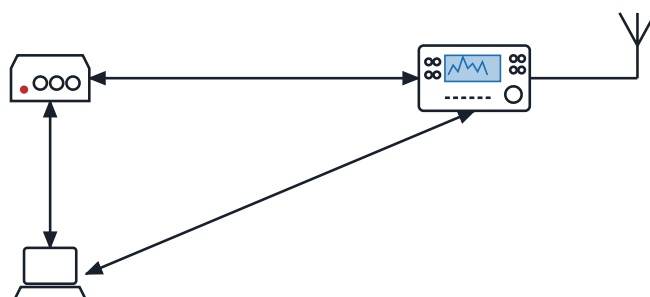
Yagi-Uda Antenna



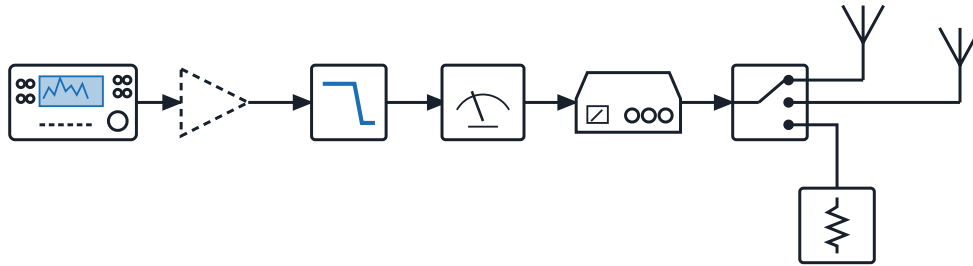
Legacy Digital Modes



Current Digital Modes



Typical HF Installation



Sheet redrawn from the ISED reference material.

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