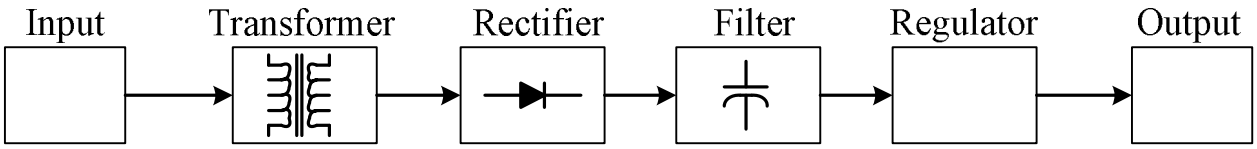
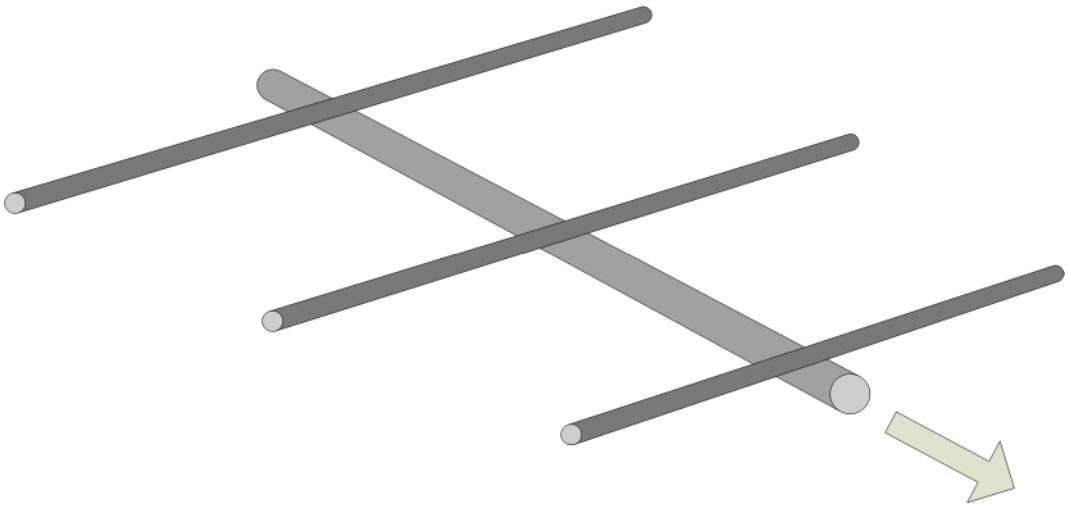
## Regulated Power Supply



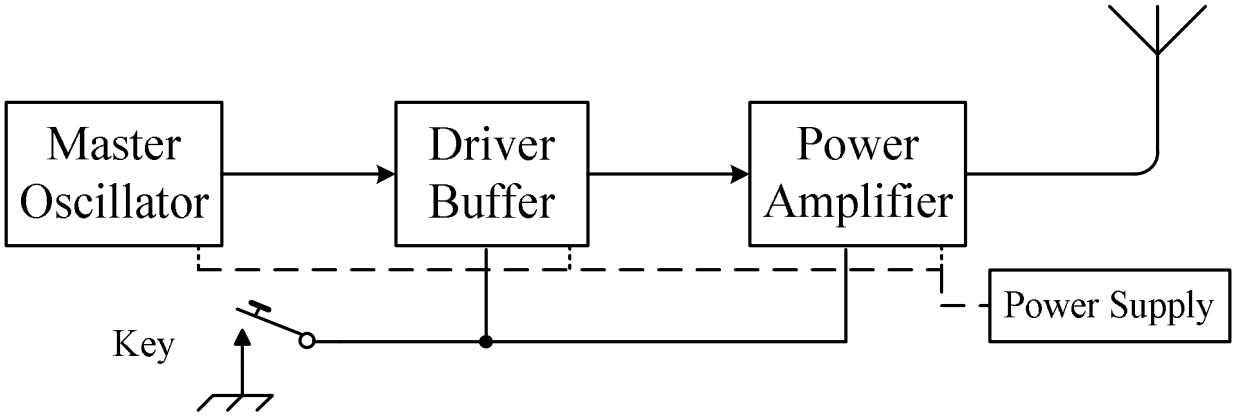

| | |
|---|---|
| Input | On/Off switch, fuse, pilot light, the actual power source… |
| Transformer | Raises or decreases the voltage. |
| Rectifier | Converts AC to DC. |
| Filter | Removes the ripple. |
| Regulator | Maintains constant output voltage regardless of line/load variations. |
| Output | Fuse, instruments, … |

## Yagi ( beam parasitic antenna )



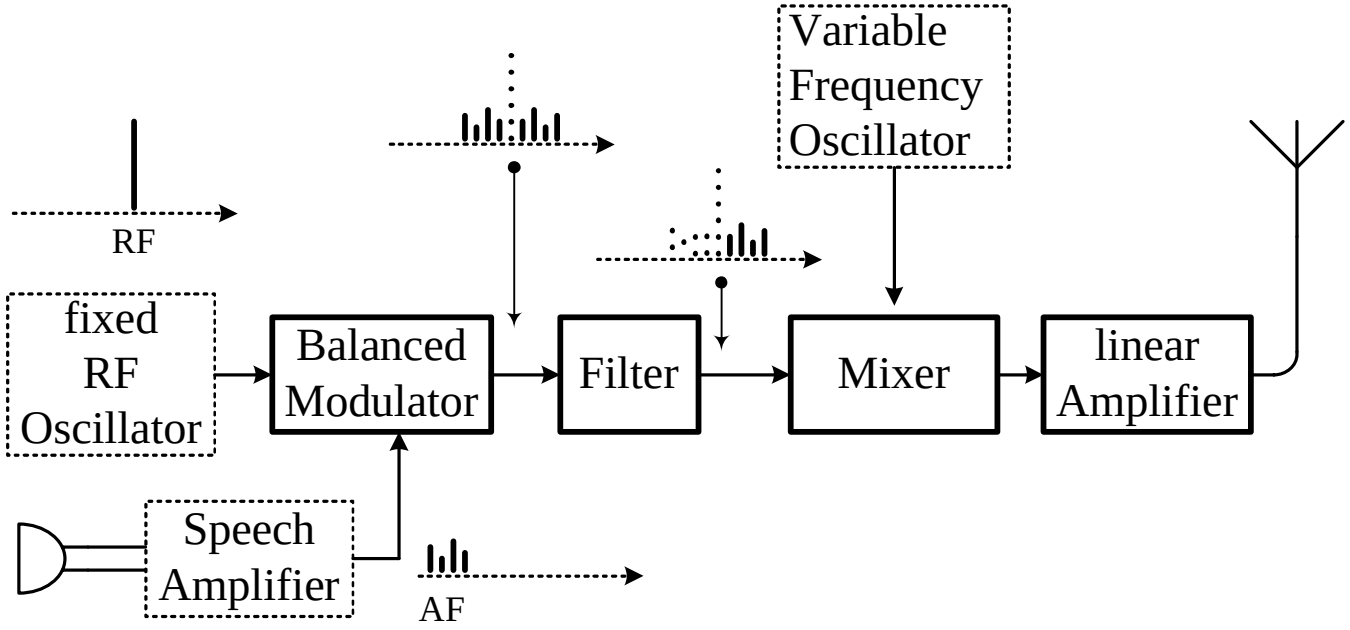
| | |
|---|---|
| Reflector | In the back, 5% longer than driven. |
| Driven | Where the feedline attaches. Similar in size to a halfwave dipole. |
| Director | In the front, 5% shorter than driven. |
| Boom | Supports the elements ( mechanical support ). |

## CW Transmitter



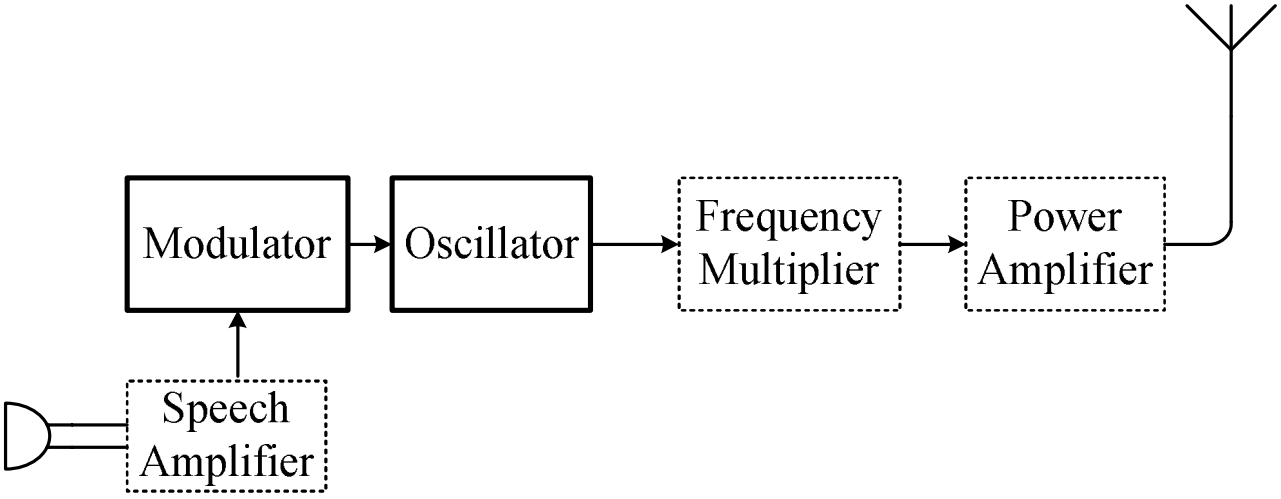

| | |
|---|---|
| Master Oscillator | Provides a stable RF signal. |
| Driver / Buffer | Isolates the oscillator from the Power Amplifier. Amplifies the RF signal. |
| Power Amplifier | Final amplification for the RF signal. |
| Key | Permits on/off keying. |
| Power Supply | Provides Direct Current to the various stages. |

## SSB Transmitter



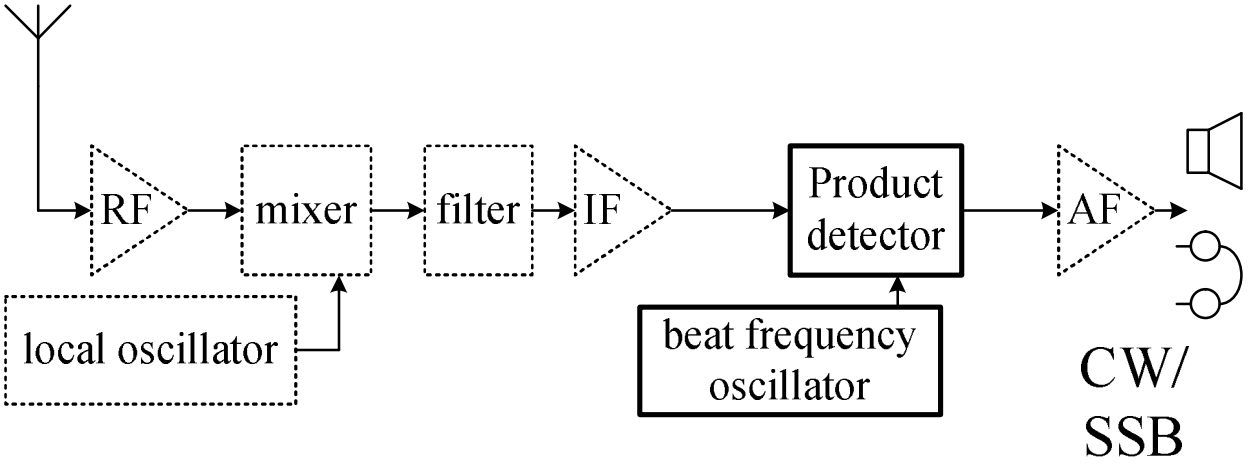

| | |
|---|---|
| RF Oscillator | Supplies fixed frequency radio signal to the Balanced Modulator. |
| Speech Amplifier | Brings the microphone signal to a working level. |
| Balanced Modulator | Mixes RF signal and audio signal to create a suppressed-carrier modulated signal. |
| Filter | Passes the selected sideband ( upper or lower ). |
| VFO | Sets the operating frequency. |
| Mixer | Mixes the modulated RF signal with the VFO to create the final signal. |
| Linear Amplifier | Final power amplifier ( must be distortion free ). |

## FM transmitter



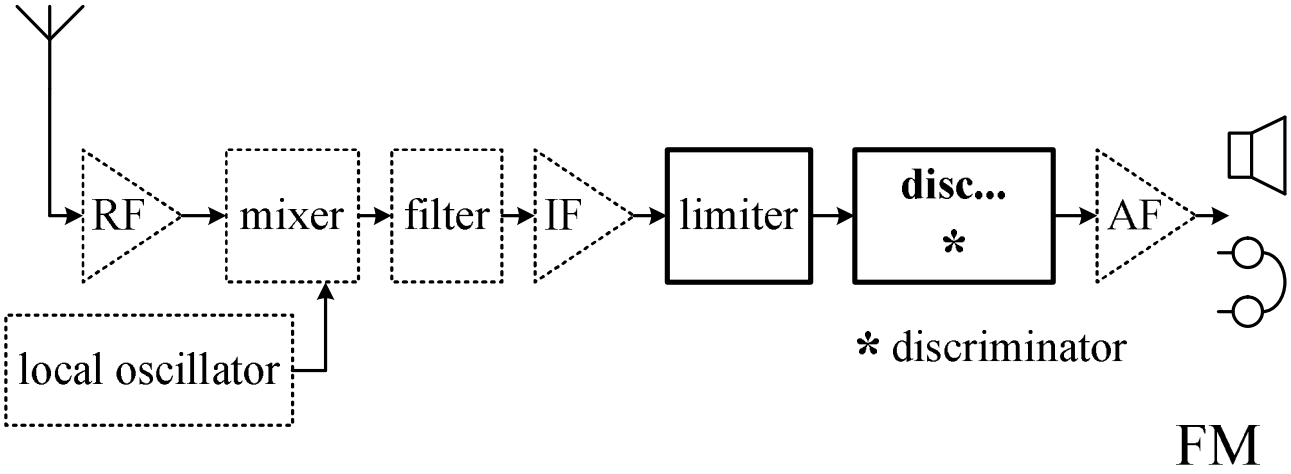

| | |
|---|---|
| Speech Amplifier | Brings the microphone signal to a working level. |
| Modulator | Forces deviation of the Oscillator frequency to produce FM. |
| Oscillator | Provides the base RF signal. |
| Frequency Multiplier | Brings the Oscillator signal up to the operating frequency. |
| Power Amplifier | Final amplification for the RF signal. |

## CW/SSB Receiver



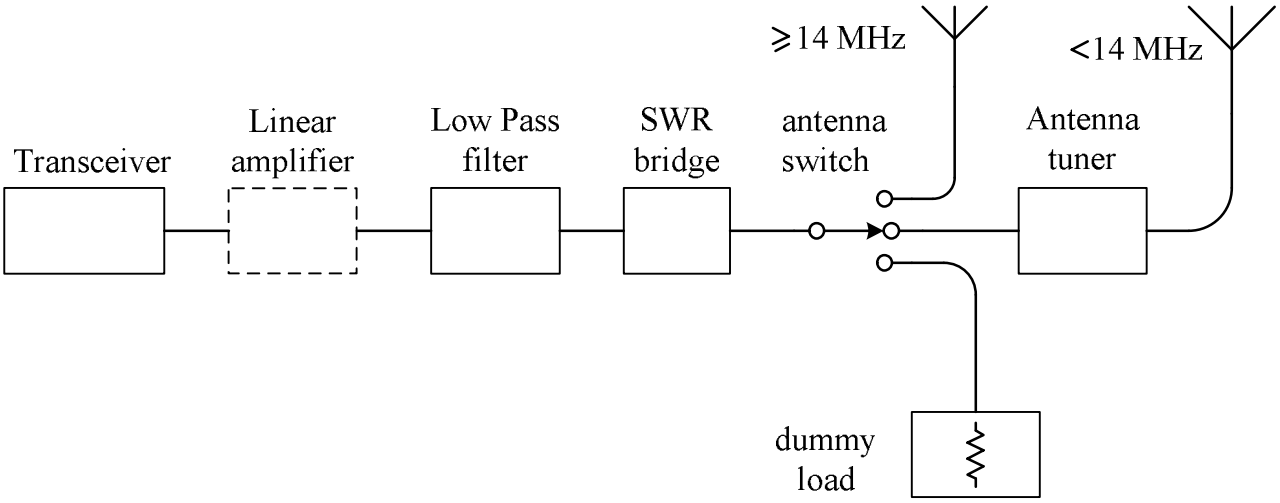

| | |
|---|---|
| RF Amplifier | Amplifies the signal arriving from the antenna. |
| Mixer | Converts received frequency to Intermediate Frequency. |
| Local Oscillator | Supplies one input to the mixer. |
| IF Filter | Passes desired mixing result. |
| Intermediate Frequency Amplifier | Amplifies the IF signal. |
| Product Detector | Mixes the IF with the BFO to produce an audible signal. |
| Beat Frequency Oscillator | Supplies one input to BFO ( “carrier re-insertion” ). |
| Audio Amplifier | Amplifies the audio signal to drive the speaker/headphones. |

## FM Receiver




| | |
|---|---|
| RF Amplifier | Amplifies the signal arriving from the antenna. |
| Mixer | Converts received frequency to Intermediate Frequency. |
| Local Oscillator | Supplies one input to the mixer. |
| IF Filter | Passes desired mixing result. |
| I F Amplifier | Amplifies the IF signal. |
| LIMITER | Maintains a constant amplitude IF signal to the Discriminator. |
| DISCRIMINATOR | Extracts the original modulation from the FM signal. |
| Audio Amplifier | Amplifies the audio signal to drive the speaker/headphones. |

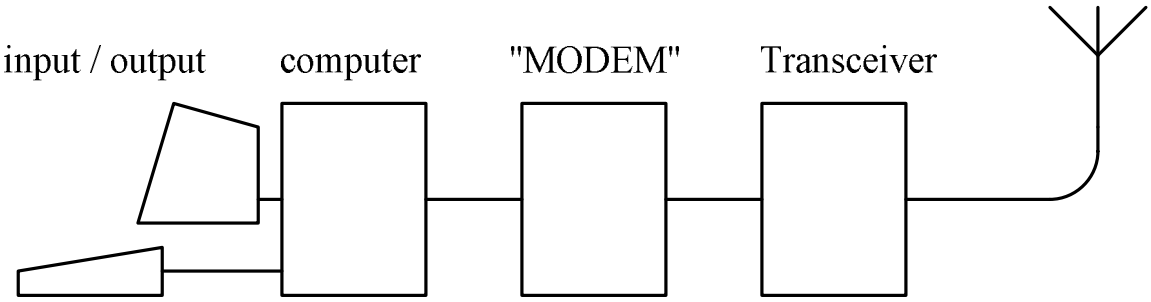
## HF Station




| | |
|---|---|
| Transceiver | Combined transmitter/receiver. |
| Linear Amplifier | Optional. Used for higher power. |
| Low Pass Filter | Attenuates any harmonics ( unwanted multiples of the operating frequency ). |
| SWR bridge | Measures effectiveness of the antenna system through a measure of the impedance match. |
| Antenna switch | Facilitates connecting the correct antenna to the station. |
| Dummy load | Permits adjustments to the transmitter (tuning) without placing signal on the air. |
| Antenna tuner | Matches the antenna impedance to the transmitter ( extends bandwidth of antennas or makes them usable on other bands ). |

Note: In a “state-of-the-art” station, the Low Pass Filter would follow the SWR Bridge.

## Digital Station




| | |
|---|---|
| Input/output | Keyboard, display or other source of data. |
| Computer | |
| MODEM | MOdulator/DEModulator: converts ASCII data to audio tones and vice-versa. |
| Transceiver | |

To CONNECT:

In most questions aimed at testing your knowledge of the block diagrams, some 'key' word will steer you downstream or upstream: i.e., do they want to know about the block AFTER or the block BEFORE ?

Here are some of these phrases:

" is connected to the INPUT of... "
" is in between "
" the OUTPUT of ... is fed to... "

Question B-003-3-10 on FM receivers asks " The <blank> connects to the AUDIO amplifier. "
Should you answer the Discriminator or the Speaker ???
The answer they want is "SPEAKER".

My Canadian Oxford dictionary says this about the verb 'connect':

"Join one thing with another, for example, connect the hose to the tap".
Notice that the 'hose' is downstream of the tap.

It goes on to say "join (a house etc.) to a source of electricity, gas, water, etc."
Again an example of connecting to a SOURCE.

Question B-003-08-06 on Power Supplies asks " In a regulated power supply, the <blank> is connected to the regulator. " Answer: the OUTPUT block connects to the preceding Regulator.

Please remember these examples if faced with the question.

Past students have suggested beginning an exam by drawing the diagrams on paper so they'd be at their fingertips when the questions come up. Not a bad idea.