

## Chapter 4.0 How Radio Works

### Section 4.1 AM & SSB

G2A06 (B) p.86

Which of the following is an advantage when using single sideband as compared to other analog voice modes on the HF amateur bands?

- A. Very high fidelity voice modulation
- B. Less bandwidth used and greater power efficiency
- C. Ease of tuning on receive and immunity to impulse noise
- D. Less subject to interference from atmospheric static crashes

G2A07 (B) p.88

Which of the following statements is true of the single sideband voice mode?

- A. Only one sideband and the carrier are transmitted; the other sideband is suppressed
- B. Only one sideband is transmitted; the other sideband and carrier are suppressed
- C. SSB is the only voice mode that is authorized on the 20-meter, 15-meter, and 10-meter amateur bands
- D. SSB is the only voice mode that is authorized on the 160-meter, 75-meter and 40-meter amateur bands

G4A11 (A) p.102

Which of the following is a use for the IF shift control on a receiver?

- A. To avoid interference from stations very close to the receive frequency
- B. To change frequency rapidly
- C. To permit listening on a different frequency from that on which you are transmitting
- D. To tune in stations that are slightly off frequency without changing your transmit frequency

G4A14 (B) p.97

What is likely to happen if a transceiver's ALC system is not set properly when transmitting AFSK signals with the radio using single sideband mode?

- A. ALC will invert the modulation of the AFSK mode
- B. Improper action of ALC distorts the signal and can cause spurious emissions
- C. When using digital modes, too much ALC activity can cause the transmitter to overheat
- D. All of these choices are correct

G4D08 (C) p.89

What frequency range is occupied by a 3 kHz LSB signal when the displayed carrier frequency is set to 7.178 MHz?

- A. 7.178 to 7.181 MHz
- B. 7.178 to 7.184 MHz
- C. 7.175 to 7.178 MHz
- D. 7.1765 to 7.1795 MHz

G4D09 (B) p.89

What frequency range is occupied by a 3 kHz USB signal with the displayed carrier frequency set to 14.347 MHz?

- A. 14.347 to 14.647 MHz
- B. 14.347 to 14.350 MHz
- C. 14.344 to 14.347 MHz
- D. 14.3455 to 14.3485 MHz

G4D10 (A) p.89

How close to the lower edge of the 40-meter General Class phone segment should your displayed carrier frequency be when using 3 kHz wide LSB?

- A. At least 3 kHz above the edge of the segment
- B. At least 3 kHz below the edge of the segment
- C. Your displayed carrier frequency may be set at the edge of the segment
- D. At least 1 kHz above the edge of the segment

G4D11 (B) p.90

How close to the upper edge of the 20-meter General Class band should your displayed carrier frequency be when using 3 kHz wide USB?

- A. At least 3 kHz above the edge of the band
- B. At least 3 kHz below the edge of the band
- C. Your displayed carrier frequency may be set at the edge of the band
- D. At least 1 kHz below the edge of the segment

G7C01 (B) p.96

Which of the following is used to process signals from the balanced modulator then send them to the mixer in some single sideband phone transmitters?

- A. Carrier oscillator
- B. Filter
- C. IF amplifier
- D. RF amplifier

G7C02 (D) p.96

Which circuit is used to combine signals from the carrier oscillator and speech amplifier then send the result to the filter in some single sideband phone transmitters?

- A. Discriminator
- B. Detector
- C. IF amplifier
- D. Balanced modulator

G7C03 (C) p.98

What circuit is used to process signals from the RF amplifier and local oscillator then send the result to the IF filter in a superheterodyne receiver?

- A. Balanced modulator
- B. IF amplifier
- C. Mixer
- D. Detector

G7C04 (D) p.98

What circuit is used to combine signals from the IF amplifier and BFO and send the result to the AF amplifier in some single sideband receivers?

- A. RF oscillator
- B. IF filter
- C. Balanced modulator
- D. Product detector

G7C07 (C) p.100

What is the simplest combination of stages that implement a superheterodyne receiver?

- A. RF amplifier, detector, audio amplifier
- B. RF amplifier, mixer, IF discriminator
- C. HF oscillator, mixer, detector
- D. HF oscillator, prescaler, audio amplifier

G8A05 (D) p.87

What type of modulation varies the instantaneous power level of the RF signal?

- A. Frequency shift keying
- B. Phase modulation
- C. Frequency modulation
- D. Amplitude modulation

G8A06 (C) p.88

What is one advantage of carrier suppression in a single sideband phone transmission versus full carrier amplitude modulation?

- A. Audio fidelity is improved
- B. Greater modulation percentage is obtainable with lower distortion
- C. Available transmitter power can be used more effectively
- D. Simpler receiving equipment can be used

G8A07 (A) p.88

Which of the following phone emissions uses the narrowest bandwidth?

- A. Single sideband
- B. Double sideband
- C. Phase modulation
- D. Frequency modulation

G8A09 (B) p.97

What control is typically adjusted for proper ALC setting on an amateur single sideband transceiver?

- A. The RF clipping level
- B. Transmit audio or microphone gain
- C. Antenna inductance or capacitance
- D. Attenuator level

G8A10 (C) p.97

What is meant by the term flat-topping when referring to a single sideband phone transmission?

- A. Signal distortion caused by insufficient collector current
- B. The transmitter's automatic level control (ALC) is properly adjusted
- C. Signal distortion caused by excessive drive
- D. The transmitter's carrier is properly suppressed

G8A11 (A) p.87

What is the modulation envelope of an AM signal?

- A. The waveform created by connecting the peak values of the modulated signal
- B. The carrier frequency that contains the signal
- C. Spurious signals that envelop nearby frequencies
- D. The bandwidth of the modulated signal

G8B01 (A) p.101

What receiver stage combines a 14.250 MHz input signal with a 13.795 MHz oscillator signal to produce a 455 kHz intermediate frequency (IF) signal?

- A. Mixer
- B. BFO
- C. VFO
- D. Discriminator

G8B02 (B) p.102

If a receiver mixes a 13.800 MHz VFO with a 14.255 MHz received signal to produce a 455 kHz intermediate frequency (IF) signal, what type of interference will a 13.345 MHz signal produce in the receiver?

- A. Quadrature noise
- B. Image response
- C. Mixer interference
- D. Intermediate interference

G8B03 (A) p.92

What is another term for the mixing of two RF signals?

- A. Heterodyning
- B. Synthesizing
- C. Cancellation
- D. Phase inverting