

B-007-007-010 (B)

Excluding enhanced propagation modes, what is the approximate range of normal VHF tropospheric propagation?

- A 1600 km (1000 miles)
- B 800 km (500 miles)
- C 2400 km (1500 miles)
- D 3200 km (2000 miles)

B-007-007-011 (C)

What effect is responsible for propagating a VHF signal over 800 km (500 miles)?

- A D-region absorption
- B Moon bounce (EME) Earth - Moon - Earth
- C Tropospheric ducting
- D Faraday rotation

B-007-008-001 (D)

What kind of unusual HF propagation allows weak signals from the skip zone to be heard occasionally?

- A Sky-wave with low radiation angle
- B Ducting
- C Ground-wave
- D Scatter-mode

B-007-008-002 (A)

If you receive a weak, distorted signal from a distance, and close to the maximum usable frequency, what type of propagation is probably occurring?

- A Scatter
- B Ground-wave
- C Line-of-sight
- D Ducting

B-007-008-003 (C)

What is a characteristic of HF scatter signals?

- A Reversed sidebands
- B High intelligibility
- C Rapid flutter or hollow sounding distortion
- D Reversed modulation

B-007-008-004 (B)

What makes HF scatter signals often sound distorted?

- A The state of the E-region at the point of refraction
- B Energy scattered into the skip zone through several radio-wave paths
- C Auroral activity and changes in the Earth's magnetic field
- D Propagation through ground waves that absorb much of the signal

B-007-008-005 (B)

Why are HF scatter signals usually weak?

- A Auroral activity absorbs most of the signal energy
- B Only a small part of the signal energy is scattered into the skip zone
- C Propagation through ground waves absorbs most of the signal energy
- D The F region of the ionosphere absorbs most of the signal energy

B-007-008-006 (C)

What type of propagation may allow a weak signal to be heard at a distance too far for ground-wave propagation but too near for normal sky-wave propagation?

- A Sporadic-E skip
- B Ground wave
- C Scatter
- D Short-path skip

B-007-008-007 (C)

On the HF bands, when is scatter propagation most likely involved?

- A At night
- B When the F1 and F2 regions are combined
- C When weak and distorted signals near or above the maximum usable frequency for normal propagation can be heard over unusual paths
- D When the sunspot cycle is at a minimum and D-region absorption is high

B-007-008-008 (A)

Which of the following is not a scatter mode?

- A Absorption scatter
- B Meteor scatter
- C Tropospheric scatter
- D Ionospheric scatter

B-007-008-009 (B)

Meteor scatter is most effective on what band?

- A 160 metres
- B 6 metres
- C 40 metres
- D 15 metres

B-007-008-010 (B)

Which of the following is not a scatter mode?

- A Forward scatter
- B Inverted scatter
- C Side scatter
- D Back scatter

B-007-008-011 (D)

In which frequency range is meteor scatter most effective for extended-range communication?

- A 10 - 30 MHz
- B 3 - 10 MHz
- C 100 - 300 MHz
- D 30 - 100 MHz

B-008-001-001 (A)

What is meant by receiver overload?

- A Interference caused by strong signals from a nearby transmitter
- B Interference caused by turning the volume up too high
- C Too much current from the power supply
- D Too much voltage from the power supply

B-008-001-002 (C)

What is one way to tell if radio frequency interference to a receiver is caused by front-end overload?

- A If connecting a low pass filter to the receiver greatly cuts down the interference
- B If connecting a low pass filter to the transmitter greatly cuts down the interference
- C If the interference is about the same no matter what frequency is used for the transmitter
- D If grounding the receiver makes the problem worse

B-008-001-003 (A)

If a neighbour reports television interference whenever you transmit, no matter what band you use, what is probably the cause of the interference?

- A Receiver overload
- B Incorrect antenna length
- C Receiver VR tube discharge
- D Too little transmitter harmonic suppression

B-008-001-004 (B)

What type of filter should be connected to a TV receiver as the first step in trying to prevent RF overload from an amateur HF station transmission?

- A No filter
- B High-pass
- C Low-pass
- D Band-pass

B-008-001-005 (B)

During a club ARRL Field Day outing, reception on the 20 m SSB station is compromised every time the 20 m CW station is on the air. What might cause such interference?

- A Harmonic radiation
- B Receiver desensitization
- C Both stations are fed from the same generator
- D Improper station grounding

B-008-001-006 (C)

Inter-modulation in a broadcast receiver by a nearby transmitter would be noticed in the receiver as:

- A distortion on transmitted voice peaks
- B interference continuously across the dial
- C the undesired signal in the background of the desired signal
- D interference only when a broadcast signal is tuned

B-008-001-007 (C)

You have connected your hand-held VHF transceiver to an outside gain antenna. You now hear a mixture of signals together with different modulation on your desired frequency. What is the nature of this interference?

- A Audio stage overload interference
- B Audio stage intermodulation interference
- C Receiver intermodulation interference
- D Harmonic interference from other stations

B-008-001-008 (D)

Two or more strong out-of-band signals mix in your receiver to produce interference on a desired frequency. What is this called?

- A Receiver quieting
- B Capture effect
- C Front-end desensitization
- D Intermodulation interference

B-008-001-009 (D)

Two mobile stations are traveling along the same road in close proximity to each other and having trouble communicating through a local repeater. Why may it be necessary to use simplex operation to communicate between these cars?

- A Simplex operation does not require the use of CTCSS tones
- B There is less time delay using simplex operation compared to using a repeater
- C There are many more simplex frequencies than repeater frequencies available
- D The strong signal of one mobile transmitter may desensitize the receiver of the other mobile receiver

B-008-001-010 (A)

A television receiver suffers interference on channel 5 (76 - 82 MHz) only when you transmit on 14 MHz. From your home you see the tower of a commercial FM station known to broadcast on 92.5 MHz. Which of these solutions would you try first?

- A Insert a high pass filter at the antenna connector of the television
- B Insert a low pass filter at the antenna connector of the HF transmitter
- C Insert a high pass filter at the antenna connector of the HF transmitter
- D Insert a low pass filter at the antenna connector of the television

B-008-001-011 (A)

How can intermodulation be reduced?

- A By installing a suitable filter at the receiver
- B By using a better antenna
- C By increasing the receiver RF gain while decreasing the AF gain
- D By adjusting the passband tuning

B-008-002-001 (C)

What devices would you install to reduce or eliminate audio-frequency interference to home entertainment systems?

- A Metal-oxide varistors
- B Bypass inductors
- C Coils on ferrite cores
- D Bypass resistors

B-008-002-002 (C)

What should be done if a properly operating amateur station is the cause of interference to a nearby telephone?

- A Stop transmitting whenever the telephone is in use
- B Make internal adjustments to the telephone equipment
- C Install a modular plug-in telephone RFI filter close to the telephone device
- D Ground and shield the local telephone distribution amplifier

B-008-002-003 (A)

What sound is heard from a public-address system if audio rectification of a nearby single-sideband phone transmission occurs?

- A Distorted speech from the transmitter's signals
- B Clearly audible speech from the transmitter's signals
- C On-and-off humming or clicking
- D A steady hum whenever the transmitter's carrier is on the air

B-008-002-004 (C)

What sound is heard from a public-address system if audio rectification of a nearby CW transmission occurs?

- A Muffled, severely distorted speech
- B A steady whistling
- C On-and-off humming or clicking
- D Audible, possibly distorted speech

B-008-002-005 (A)

How can you minimize the possibility of audio rectification of your transmitter's signals?

- A Ensure that all station equipment is properly grounded
- B Install bypass capacitors on all power supply rectifiers
- C Use CW only
- D Use a solid-state transmitter

B-008-002-006 (A)

An amateur transmitter is being heard across the entire dial of a broadcast receiver. The receiver is most probably suffering from:

- A audio rectification in the receiver
- B harmonics interference from the transmitter
- C poor image rejection
- D splatter from the transmitter

B-008-002-007 (A)

Your SSB HF transmissions are heard muffled on a sound system in the living room regardless of its volume setting. What causes this?

- A Audio rectification of strong signals
- B Harmonics generated at the transmitter
- C Improper filtering in the transmitter
- D Lack of receiver sensitivity and selectivity

B-008-002-008 (B)

What device can be used to minimize the effect of RF pickup by audio wires connected to stereo speakers, intercom amplifiers, telephones, etc.?

- A Diode
- B Ferrite core
- C Magnet
- D Attenuator

B-008-002-009 (D)

Stereo speaker leads often act as antennas to pick up RF signals. What is one method you can use to minimize this effect?

- A Lengthen the leads
- B Connect the speaker through an audio attenuator
- C Connect a diode across the speaker
- D Shorten the leads

B-008-002-010 (A)

One method of preventing RF from entering a stereo set through the speaker leads is to wrap each of the speaker leads:

- A through a ferrite core
- B around a copper bar
- C around an iron bar
- D around a wooden dowel

B-008-002-011 (C)

Stereo amplifiers often have long leads which pick up transmitted signals because they act as:

- A RF attenuators
- B frequency discriminators
- C receiving antennas
- D transmitting antennas

B-008-003-001 (B)

How can you prevent key-clicks?

- A By sending CW more slowly
- B By using a key-click filter
- C By increasing power
- D By using a better power supply

B-008-003-002 (D)

If someone tells you that signals from your hand-held transceiver are interfering with other signals on a frequency near yours, what could be the cause?

- A You need a power amplifier for your hand-held
- B Your hand-held has a chirp from weak batteries
- C You need to turn the volume up on your hand-held
- D Your hand-held is transmitting spurious emissions

B-008-003-003 (B)

If your transmitter sends signals outside the band where it is transmitting, what is this called?

- A Off-frequency emissions
- B Spurious emissions
- C Side tones
- D Transmitter chirping

B-008-003-004 (B)

What problem may occur if your transmitter is operated without the cover and other shielding in place?

- A It may transmit a chirpy signal
- B It may radiate spurious emissions
- C It may transmit a weak signal
- D It may interfere with other stations operating near its frequency

B-008-003-005 (B)

In Morse code transmission, local RF interference (key-clicks) is produced by:

- A poor waveshaping caused by a poor voltage regulator
- B the making and breaking of the circuit at the Morse key
- C frequency shifting caused by poor voltage regulation
- D the power amplifier, and is caused by high frequency parasitic oscillations

B-008-003-006 (A)

Key-clicks, heard from a Morse code transmitter at a distant receiver, are the result of:

- A too sharp rise and decay times of the keyed carrier
- B power supply hum modulating the carrier
- C sparks emitting RF from the key contacts
- D changes in oscillator frequency on keying

B-008-003-007 (D)

In a Morse code transmission, broad bandwidth RF interference (key-clicks) heard at a distance is produced by:

- A shift in frequency when keying the transmitter
- B sparking at the key contacts
- C sudden movement in the receiver loudspeaker
- D poor shaping of the waveform

B-008-003-008 (C)

What should you do if you learn your transmitter is producing key clicks?

- A Regulate the oscillator supply voltage
- B Use a choke in the RF power output
- C Check the keying filter and the functioning of later stages
- D Turn the receiver down

B-008-003-009 (A)

A parasitic oscillation:

- A is an unwanted signal developed in a transmitter
- B is generated by parasitic elements of a Yagi beam
- C does not cause any radio interference
- D is produced in a transmitter oscillator stage

B-008-003-010 (A)

Parasitic oscillations in the RF power amplifier stage of a transmitter may be found:

- A at high or low frequencies
- B on harmonic frequencies
- C at high frequencies only
- D at low frequencies only

B-008-003-011 (A)

Transmitter RF amplifiers can generate parasitic oscillations:

- A above or below the transmitter frequency
- B on VHF frequencies only
- C on the transmitter fundamental frequency
- D on harmonics of the transmitter frequency

B-008-004-001 (D)

If a neighbour reports television interference on one or two channels only when you transmit on 15 metres, what is probably the cause of the interference?

- A De ionization of the ionosphere near your neighbour's TV antenna
- B TV receiver front-end overload
- C Too much low pass filtering on the transmitter
- D Harmonic radiation from your transmitter

B-008-004-002 (A)

What is meant by harmonic radiation?

- A Unwanted signals at frequencies which are multiples of the fundamental (chosen) frequency
- B Unwanted signals that are combined with a 60-Hz hum
- C Unwanted signals caused by sympathetic vibrations from a nearby transmitter
- D Signals which cause skip propagation to occur

B-008-004-003 (C)

Why is harmonic radiation from an amateur station not wanted?

- A It may cause sympathetic vibrations in nearby transmitters
- B It may cause auroras in the air
- C It may cause interference to other stations and may result in out-of-band signals
- D It uses large amounts of electric power

B-008-004-004 (B)

What type of interference may come from a multi-band antenna connected to a poorly tuned transmitter?

- A Auroral distortion
- B Harmonic radiation
- C Parasitic excitation
- D Intermodulation

B-008-004-005 (D)

If you are told your station was heard on 21 375 kHz, but at the time you were operating on 7125 kHz, what is one reason this could happen?

- A Your transmitter's power-supply filter choke was bad
- B You were sending CW too fast
- C Your transmitter's power-supply filter capacitor was bad
- D Your transmitter was radiating harmonic signals

B-008-004-006 (A)

What causes splatter interference?

- A Overmodulating a transmitter
- B Keying a transmitter too fast
- C Signals from a transmitter's output circuit are being sent back to its input circuit
- D The transmitting antenna is the wrong length

B-008-004-007 (C)

Your amateur radio transmitter appears to be creating interference to the television on channel 3 (60-66 MHz) when you are transmitting on the 15 metre band. Other channels are not affected. The most likely cause is:

- A a bad ground at the transmitter
- B front-end overload of the TV
- C harmonic radiation from the transmitter
- D no high-pass filter on the TV

B-008-004-008 (D)

One possible cause of TV interference by harmonics from an SSB transmitter is from "flat topping" - driving the power amplifier into non-linear operation. The most appropriate remedy for this is:

- A retune transmitter output
- B use another antenna
- C reduce oscillator output
- D reduce microphone gain

B-008-004-009 (A)

In a transmitter, excessive harmonics are produced by:

- A overdriven stages
- B low SWR
- C resonant circuits
- D a linear amplifier

B-008-004-010 (A)

An interfering signal from a transmitter is found to have a frequency of 57 MHz (TV Channel 2 is 54 - 60 MHz). This signal could be the:

- A second harmonic of a 10 metre transmission
- B crystal oscillator operating on its fundamental
- C seventh harmonic of an 80 metre transmission
- D third harmonic of a 15 metre transmission

B-008-004-011 (B)

Harmonics may be produced in the RF power amplifier of a transmitter if:

- A modulation is applied to a high-level stage
- B excessive drive signal is applied to it
- C the output tank circuit is tuned to the fundamental frequency
- D the oscillator frequency is unstable

B-008-005-001 (D)

What type of filter might be connected to an amateur HF transmitter to cut down on harmonic radiation?

- A A key-click filter
- B A high pass filter
- C A CW filter
- D A low pass filter

B-008-005-002 (A)

Why do modern HF transmitters have a built-in low pass filter in their RF output circuits?

- A To reduce harmonic radiation
- B To reduce fundamental radiation
- C To reduce low frequency interference to other amateurs
- D To reduce RF energy below a cut-off point

B-008-005-003 (B)

What circuit blocks RF energy above and below a certain limit?

- A A low pass filter
- B A band pass filter
- C A high pass filter
- D An input filter