Chapter 7.5 – Quiz 1 – Feed Lines

G4A06 - What is the purpose of an antenna tuner?

- A. Reduce the SWR in the feed line to the antenna
- B. Reduce the power dissipation in the feedline to the antenna
- C. Increase power transfer from the transmitter to the feed line
- D. All these choices are correct

G9A01 - Which of the following factors determine the characteristic impedance of a parallel conductor feed line?

- A. The distance between the centers of the conductors and the radius of the conductors
- B. The distance between the centers of the conductors and the length of the line
- C. The radius of the conductors and the frequency of the signal
- D. The frequency of the signal and the length of the line

G9A02 - What is the relationship between high standing wave ratio (SWR) and transmission line loss?

- A. There is no relationship between transmission line loss and SWR
- B. High SWR increases loss in a lossy transmission line
- C. High SWR makes it difficult to measure transmission line loss
- D. High SWR reduces the relative effect of transmission line loss

G9A03 - What is the nominal characteristic impedance of "window line" transmission line?

- A. 50 ohms
- B. 75 ohms
- C. 100 ohms
- D. 450 ohms

G9A04 - What causes reflected power at an antenna's feed point?

- A. Operating an antenna at its resonant frequency
- B. Using more transmitter power than the antenna can handle
- C. A difference between feed line impedance and antenna feed point impedance
- D. Feeding the antenna with unbalanced feed line

G9A05 - How does the attenuation of coaxial cable change with increasing frequency?

- A. Attenuation is independent of frequency
- B. Attenuation increases
- C. Attenuation decreases
- D. Attenuation follows Marconi's Law of Attenuation

G9A06 - In what units is RF feed line loss usually expressed?

- A. Ohms per 1,000 feet
- B. Decibels per 1,000 feet
- C. Ohms per 100 feet
- D. Decibels per 100 feet

G9A07 - What must be done to prevent standing waves on a feed line connected to an antenna?

- A. The antenna feed point must be at DC ground potential
- B. The feed line must be an odd number of electrical quarter wavelengths long
- C. The feed line must be an even number of physical half wavelengths long
- D. The antenna feed point impedance must be matched to the characteristic impedance of the feed line

G9A08 - If the SWR on an antenna feed line is 5:1, and a matching network at the transmitter end of the feed line is adjusted to present a 1:1 SWR to the transmitter, what is the resulting SWR on the feed line?

- A. 1:1
- B. 5:1
- C. Between 1:1 and 5:1 depending on the characteristic impedance of the line
- D. Between 1:1 and 5:1 depending on the reflected power at the transmitter

G9A09 - What standing wave ratio results from connecting a 50-ohm feed line to a 200-ohm resistive load?

- A. 4:1
- B. 1:4
- C. 2:1
- D. 1:2

G9A10 - What standing wave ratio results from connecting a 50-ohm feed line to a 10-ohm resistive load?

- A. 2:1
- B. 1:2
- C. 1:5
- D. 5:1

G9A11 - What is the effect of transmission line loss on SWR measured at the input to the line?

- A. Higher loss reduces SWR measured at the input to the line
- B. Higher loss increases SWR measured at the input to the line
- C. Higher loss increases the accuracy of SWR measured at the input to the line
- D. Transmission line loss does not affect the SWR measurement

End of Quiz 1

Chapter 9.1 – Quiz 2 – Electrical Safety

G0B10 - Which of the following is a danger from lead-tin solder?

- A. Lead can contaminate food if hands are not washed carefully after handling the solder
- B. High voltages can cause lead-tin solder to disintegrate suddenly
- C. Tin in the solder can "cold flow," causing shorts in the circuit
- D. RF energy can convert the lead into a poisonous gas

G0B01 - Which wire or wires in a four-conductor 240 VAC circuit should be attached to fuses or circuit breakers?

- A. Only the hot wires
- B. Only the neutral wire
- C. Only the ground wire
- D. All wires

G0B02 - According to the National Electrical Code, what is the minimum wire size that may be used safely for wiring with a 20-ampere circuit breaker?

- A. AWG number 20
- B. AWG number 16
- C. AWG number 12
- D. AWG number 8

G0B03 - Which size of fuse or circuit breaker would be appropriate to use with a circuit that uses AWG number 14 wiring?

- A. 30 amperes
- B. 25 amperes
- C. 20 amperes
- D. 15 amperes

G0B05 - Which of the following conditions will cause a ground fault circuit interrupter (GFCI) to disconnect AC power?

- A. Current flowing from one or more of the hot wires to the neutral wire
- B. Current flowing from one or more of the hot wires directly to ground
- C. Overvoltage on the hot wires
- D. All these choices are correct

G0B06 - Which of the following is covered by the National Electrical Code?

- A. Acceptable bandwidth limits
- B. Acceptable modulation limits
- C. Electrical safety of the station
- D. RF exposure limits of the human body

G0B12 - What is the purpose of a power supply interlock?

- A. To prevent unauthorized changes to the circuit that would void the manufacturer's warranty
- B. To shut down the unit if it becomes too hot
- C. To ensure that dangerous voltages are removed if the cabinet is opened
- D. To shut off the power supply if too much voltage is produced

G0B09 - Which of the following is true of an emergency generator installation?

- A. The generator should be operated in a well-ventilated area
- B. The generator must be insulated from ground
- C. Fuel should be stored near the generator for rapid refueling in case of an emergency
- D. All these choices are correct

G4C07 - Why should soldered joints not be used in lightning protection ground connections?

- A. A soldered joint will likely be destroyed by the heat of a lightning strike
- B. Solder flux will prevent a low conductivity connection
- C. Solder has too high a dielectric constant to provide adequate lightning protection
- D. All these choices are correct

G0B04 - Where should the station's lightning protection ground system be located?

- A. As close to the station equipment as possible
- B. Outside the building
- C. Next to the closest power pole
- D. Parallel to the water supply line

G0B11 - Which of the following is required for lightning protection ground rods?

- A. They must be bonded to all buried water and gas lines
- B. Bends in ground wires must be made as close as possible to a right angle
- C. Lightning grounds must be connected to all ungrounded wiring
- D. They must be bonded together with all other grounds

G0B13 - Where should lightning arrestors be located?

- A. Where the feed lines enter the building
- B. On the antenna, opposite the feed point
- C. In series with each ground lead
- D. At the closest power pole ground electrode

End of Quiz 2

Chapter 9.2 and 9.3 – Quiz 3 - RF Exposure, Outdoor Safety

G0A01 - What is one way that RF energy can affect human body tissue?

- A. It heats body tissue
- B. It causes radiation poisoning
- C. It causes the blood count to reach a dangerously low level
- D. It cools body tissue

G0A02 - Which of the following is used to determine RF exposure from a transmitted signal?

- A. Its duty cycle
- B. Its frequency
- C. Its power density
- D. All these choices are correct

G0A03 - How can you determine that your station complies with FCC RF exposure regulations?

- A. By calculation based on FCC OET Bulletin 65
- B. By calculation based on computer modeling
- C. By measurement of field strength using calibrated equipment
- D. All these choices are correct

G0A04 - What does "time averaging" mean when evaluating RF radiation exposure?

- A. The average amount of power developed by the transmitter over a specific 24-hour period
- B. The average time it takes RF radiation to have any long-term effect on the body
- C. The total time of the exposure
- D. The total RF exposure averaged over a certain period

G0A05 - What must you do if an evaluation of your station shows that the RF energy radiated by your station exceeds permissible limits for possible human absorption?

- A. Take action to prevent human exposure to the excessive RF fields
- B. File an Environmental Impact Statement (EIS-97) with the FCC
- C. Secure written permission from your neighbors to operate above the controlled MPE limits
- D. All these choices are correct

G0A06 - What must you do if your station fails to meet the FCC RF exposure exemption criteria?

- A. Perform an RF Exposure Evaluation in accordance with FCC OET Bulletin 65
- B. Contact the FCC for permission to transmit
- C. Perform an RF exposure evaluation in accordance with World Meteorological Organization guidelines
- D. Use an FCC-approved band-pass filter

G0A07 - What is the effect of modulation duty cycle on RF exposure?

- A. A lower duty cycle permits greater power levels to be transmitted
- B. A higher duty cycle permits greater power levels to be transmitted
- C. Low duty cycle transmitters are exempt from RF exposure evaluation requirements
- D. High duty cycle transmitters are exempt from RF exposure requirements

G0A08 - Which of the following steps must an amateur operator take to ensure compliance with RF safety regulations?

- A. Post a copy of FCC Part 97.13 in the station
- B. Notify neighbors within a 100-foot radius of the antenna of the existence of the station and power levels
- C. Perform a routine RF exposure evaluation and prevent access to any identified high exposure areas
- D. All these choices are correct

G0A09 - What type of instrument can be used to accurately measure an RF field strength?

- A. A receiver with digital signal processing (DSP) noise reduction
- B. A calibrated field strength meter with a calibrated antenna
- C. An SWR meter with a peak-reading function
- D. An oscilloscope with a high-stability crystal marker generator

G0A10 - What should be done if evaluation shows that a neighbor might experience more than the allowable limit of RF exposure from the main lobe of a directional antenna?

- A. Change to a non-polarized antenna with higher gain
- B. Use an antenna with a higher front-to-back ratio
- C. Take precautions to ensure that the antenna cannot be pointed in their direction when they are present
- D. All these choices are correct

G0A11 - What precaution should be taken if you install an indoor transmitting antenna?

- A. Locate the antenna close to your operating position to minimize feed-line radiation
- B. Position the antenna along the edge of a wall to reduce parasitic radiation
- C. Make sure that MPE limits are not exceeded in occupied areas
- D. Make sure the antenna is properly shielded

G0A12 - What stations are subject to the FCC rules on RF exposure?

- A. All commercial stations; amateur radio stations are exempt
- B. Only stations with antennas lower than one wavelength above the ground
- C. Only stations transmitting more than 500 watts PEP
- D. All stations with a time-averaged transmission of more than one milliwatt

G0B07 - Which of these choices should be observed when climbing a tower using a safety harness?

- A. Always hold on to the tower with one hand
- B. Confirm that the harness is rated for the weight of the climber and that it is within its allowable service life
- C. Ensure that all heavy tools are securely fastened to the harness
- D. All these choices are correct

G0B08 - What should be done before climbing a tower that supports electrically powered devices?

- A. Notify the electric company that a person will be working on the tower
- B. Make sure all circuits that supply power to the tower are locked out and tagged
- C. Unground the base of the tower
- D. All these choices are correct

End of Quiz 3