



# RADIO MERIT BADGE WORK SHEET (BYU/UVU PowWow)

Scout's Name

Instructor's Name

Scout's Address

City

State

Zip

## Instructions

- 1) The Scout is to review the merit badge book before the first week of the PowWow.
- 2) Bring this work sheet, paper, and pencil or pen each week.

## Requirement Instructions\*

- 1) Requirement 1 will be covered and should be passed off during the two sessions of PowWow.
- 2) Requirement 2 will be covered and should be passed off during the two sessions of PowWow.
- 3) Requirement 3 will be covered and should be passed off during the two sessions of PowWow.
- 4) Requirement 4 will be covered and should be passed off during the two sessions of PowWow.
- 5) Requirement 5 will be covered and should be passed off during the two sessions of PowWow.
- 6) Requirement 6 will be covered and should be passed off during the two sessions of PowWow.
- 7) Requirement 7 should be completed as **homework** in the time between the two sessions of PowWow.
- 8) Requirement 8 should be completed as **homework** before the two sessions of PowWow begin.
- 9) Requirement 9 will be covered and should be passed off during the two sessions of PowWow.

\*All requirements may be subject to change by the merit badge counselor based on time constraints at the PowWow session. Please listen to all instructions given by the instructor to be aware of any changes.

## Requirement 1

**Initial**

Explain what radio is.

Describe the differences between broadcast radio and hobby radio.

Describe the differences between broadcasting and two-way communicating.

Explain broadcast radio call signs.

Explain amateur radio call signs.

Explain the use of phonetics.

## Requirement 2

**Initial**

On the back of this worksheet, sketch a diagram showing how radio waves travel locally and around the world. Show the diagram to your counselor.

How do the broadcast radio stations WWV and WWVH help determine what you will hear when you listen to a radio?

What is the difference between a DX and a local station?

What does the Federal Communication Commission (FCC) do and how does it differ from the International Telecommunication Union?

**Requirement 3**

**Initial**

Draw a chart of the electromagnetic spectrum covering 100 kilohertz (kHz) to 1000 megahertz (MHz).

Label the MF, HF, VHF, UHF, and microwave portions of the spectrum on your diagram.

Locate on your chart at least eight radio services, such as AM and FM commercial broadcast, CB, television, amateur radio (at least four amateur radio bands), and public service (police and fire).

**Requirement 4**

**Initial**

Explain how radio waves carry information. (Include the terms: transceiver, transmitter, amplifier, and antenna.)

**Requirement 5**

**Initial**

Explain the differences between a block diagram and a schematic diagram.

On the back of this page, draw a block diagram that includes a transceiver, amplifier, microphone, antenna, and feed line.

Explain the differences among the following.

Open Circuit:

Closed Circuit:

Short Circuit:

Draw eight schematic symbols.

### **Requirement 6**

**Initial**

Explain the safety precautions for working with radio gear, including the concept of grounding for direct current circuits, power outlets, and antenna systems.

### **Requirement 7**

**Initial**

Visit a radio installation approved in advance by your counselor (amateur radio station, broadcast station, or public service communications center, for example).

Installation visited:

What is the purpose of the installation?

List the different types of equipment that you saw. Explain how they were used and what licenses are required to operate/maintain the equipment.

Equipment:

How is it used?

What licenses are required to operate and maintain this equipment?

Equipment:

How is it used?

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### **Requirement 8**

**Initial**

Find out about three career opportunities in radio. Pick one and find out the education, training, and experience required for this profession. Discuss with your counselor, and explain why this profession might interest you.

### **Requirement 9**

**Initial**

For this requirement you are given three options (a, b, or c). You must complete ONE of the options.

A) *Amateur Radio*

Why does the FCC have an amateur radio service?

Describe some of the activities that amateur radio operators can do on the air, once they have earned an amateur radio license.

Using proper call signs, Q signals, and abbreviations, carry on a 10-minute real or simulated radio contact using voice, Morse code, or digital mode. (If you are a licensed amateur radio operator, you may substitute five QSL cards as evidence of contacts with amateur radio operators from at least three different call districts.) Describe your experience.

Properly log the real or simulated ham radio contact and record the signal report.

Explain at least five Q signals or amateur radio terms you hear while listening.

- 1)
- 2)

- 3)
- 4)
- 5)

Explain some of the differences between the Technician, General, and Extra Class license requirements and privileges.

Explain who administers amateur radio exams.

Explain how you would make an emergency call on voice or Morse code.

Explain the differences between handheld transceivers and home “base” transceivers.

Explain the uses of mobile amateur radio transceivers and amateur radio repeaters.

**B) Broadcast Radio**

Prepare a program schedule for radio station “KBSA” of exactly one-half hour, including music, news, commercials, and proper station identification. Record your program on audiotape or in digital audio format using proper techniques.

Explain your experience:

Listen to and properly log 15 broadcast stations.

For five of these stations determine the program format and target audience.

Station #1)

Program Format:

Target Audience:

Station #2)

Program Format:

Target Audience:

Station #3)

Program Format:

Target Audience:

Station #4)

Program Format:

Target Audience:

Station #5)

Program Format:

Target Audience:

Explain at least eight terms used in commercial broadcasting (such as segue, cut, fade, continuity, remote, Emergency Alert System, network, cue, dead air, PSA, and playlist).

- 1.
- 2.
- 3.
- 4.

- 5.
- 6.
- 7.
- 8.

C) *Shortwave listening*

Listen across several shortwave bands for four one-hour periods, at least one period during daylight hours and at least one period at night. Describe what you heard.

Log the stations properly and locate them geographically on a globe.

Compare your daytime and nighttime logs; note the frequencies on which your selected stations were loudest during each session. Explain the differences in the signal strength from one period to the next:

For several major foreign stations (for example: BBC in Great Britain or HCJB in Ecuador), list several frequency bands used by each.

Country/Station:  
Frequency Bands Used:

Country/Station:  
Frequency Bands Used:

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Frequency Bands Used:

**Merit badge worksheets will not be accepted at the Council Office in place of the official Merit Badge Application Card. Those who do not complete all the requirements should take their partially completed merit badge worksheet and their official application card to their local merit badge counselors for completion.**