



2017 Requirements Radio Merit Badge Workbook



Name: First _____ Last _____

Jamboree ID Number (Off your badge) _____

Jamboree Troop Number _____ Home Troop Number _____

Home Address: Number & Street _____

City: _____ State: _____ Zip Code: _____

Note: This book is for your reference only. **Items in RED must be drawn or answered in writing to meet the requirements.**

1. Explain what radio is. _____

Then discuss the following:

a. The differences between broadcast radio and hobby radio. _____

b. The differences between broadcasting and two-way communications. _____

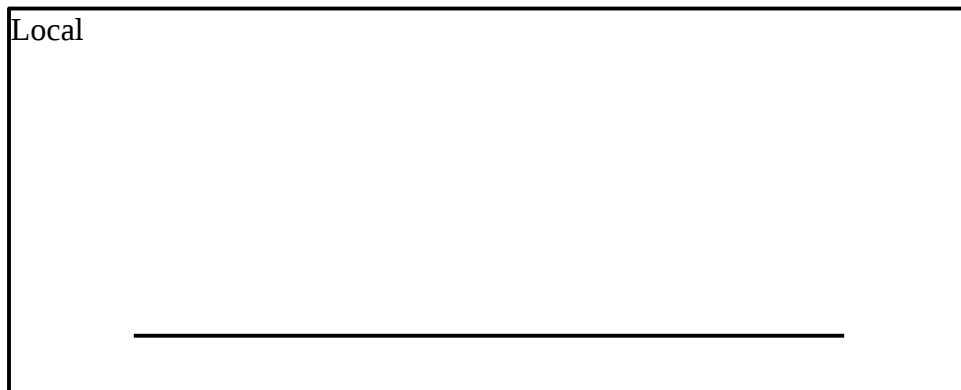
c. Radio station call signs and how they are used in broadcast radio and amateur radio. _____

What is your imaginary call sign? _____

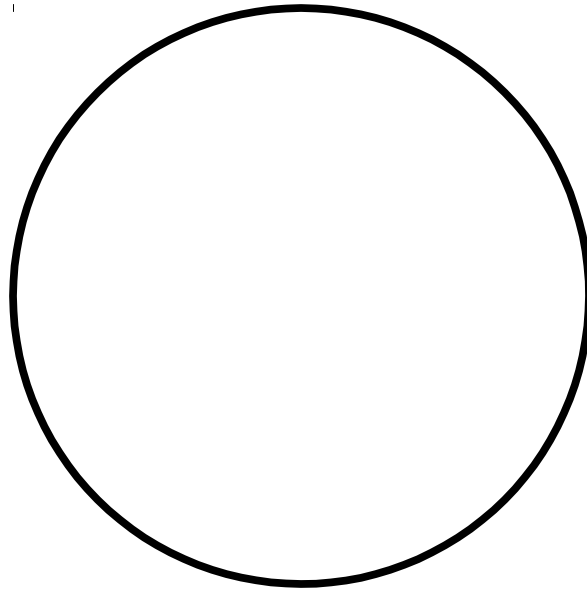
d. The phonetic alphabet and how it is used to communicate clearly. _____

2. Do the following:

a. **Sketch a diagram showing how radio waves travel locally and around the world.**



Around the World



b. _____
Explain how the broadcast radio stations, WWV and WWVH can be used to help determine what you will hear when you listen to a shortwave radio? _____

c. Explain the difference between a DX _____

and a local station. _____

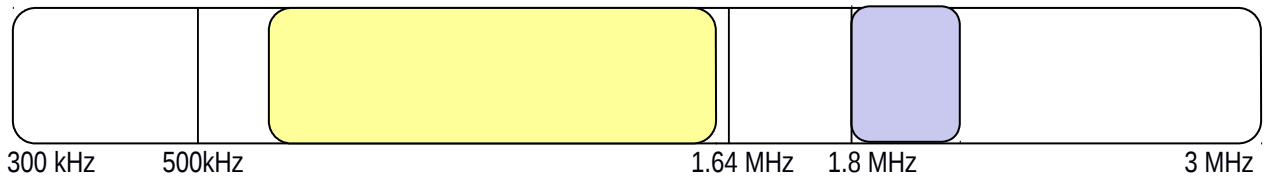
d. Discuss what the Federal Communication Commission (FCC) does _____

and how it is different from the International Telecommunication Union. _____

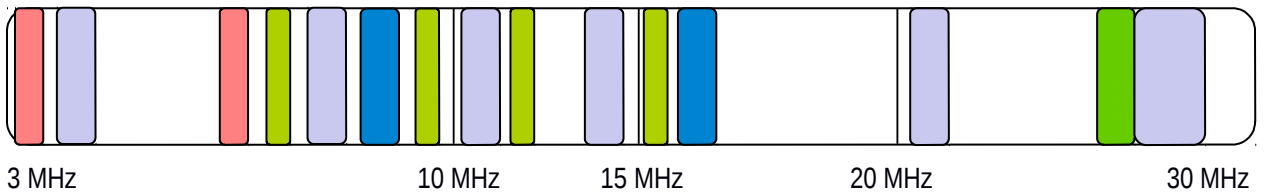
3. Do the following:

- a. Draw a chart of the electromagnetic spectrum covering 100 kilohertz (kHz) to 1000 megahertz (MHz).
- b. Label the MF, HF, VHF, UHF, and microwave portions of the spectrum on your diagram.
- c. Locate on your chart at least eight radio services such as AM and FM commercial broadcast, citizens band (CB), television, amateur radio (at least four amateur radio bands), and public service (police and fire).

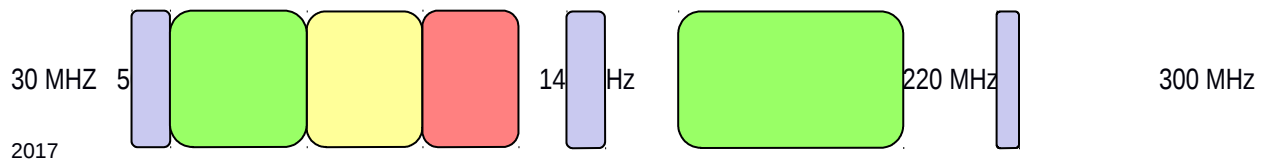
Medium Frequencies () - 300 kHz to 3 MHz



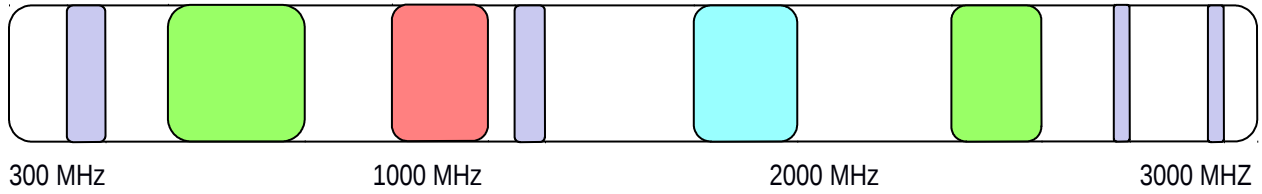
High Frequencies () – 3 MHz to 30 MHz



Very High Frequencies () – 30 MHz to 300 MHz



Ultra High Frequencies () – 300 MHz to 3000 MHz



4. Explain how radio waves carry information. _____

Include in your explanation:

transmitter, _____

receiver, _____

transceiver, _____

amplifier, _____

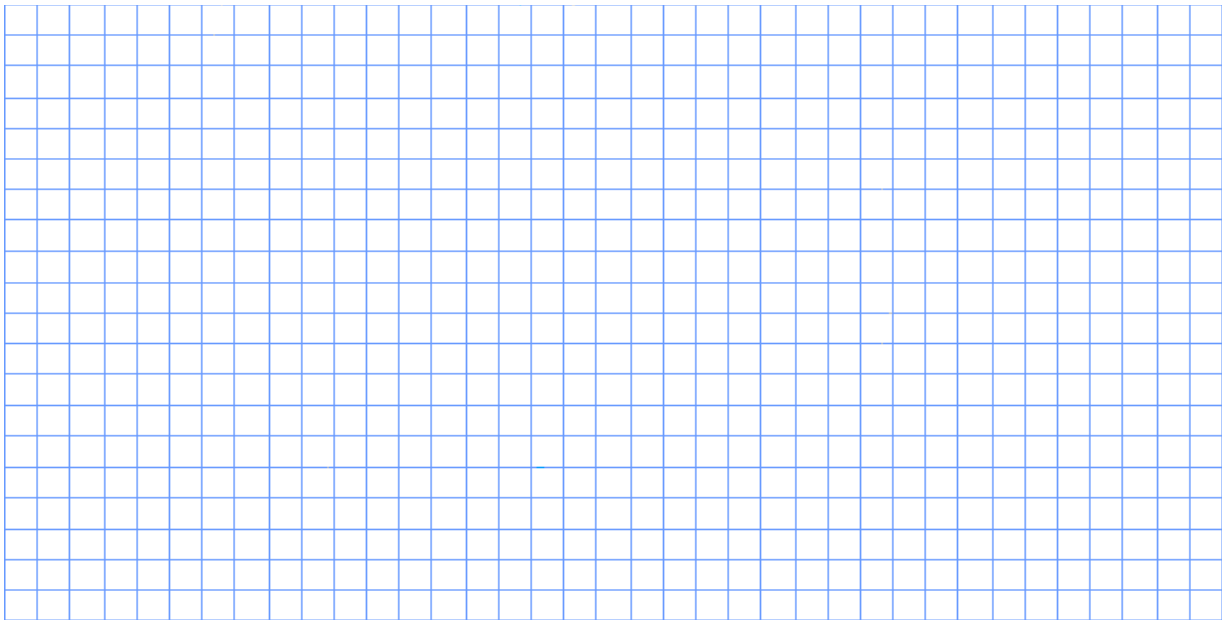
and antenna. _____

5. Do the following:

a. Explain the differences between a block diagram _____

and a schematic diagram. _____

b. Draw a block diagram for a radio station that includes a transceiver, amplifier, microphone, antenna, and feed line.



c. Discuss how information is sent using AM, FM, CW, SSB , and digital _____

d. Explain how NOAA Weather Radio can alert you to danger _____

e. Explain how cellular telephones work. Identify their benefits and limitations _____

6. Explain the safety precautions for working with radio gear, _____

including the concept of grounding for direct current circuits, _____

power outlets, _____

and antenna systems. _____

7. Visit a radio installation **See Below**

8. Find out about three career opportunities in radio.

(1) _____

(2) _____

(3) _____

Pick one _____
and find out:
the education, _____

training, _____

and experience required for this profession. _____

Discuss this with your counselor, and explain why this profession might interest you. _____

9(a) AMATEUR RADIO

1. Tell why the FCC has 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. _____

2. Explain some of the differences between the Technician, _____

General, _____

and Extra Class license requirements and privileges. _____

Explain who administers amateur radio exams. _____

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

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

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

5. Explain the differences between
hand held transceivers _____

and home "base" transceivers. _____

Explain the uses of mobile amateur radio transceivers _____

and amateur radio repeaters. _____

6. 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. (Licensed amateur radio operators may substitute five QSL cards as evidence of contacts with amateur radio operators from at least three different call districts.) Properly log the real or simulated ham radio contact and record the signal report.

Base Merit Badge 7. _____

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

Discuss:

what types of equipment you saw in use, _____

how it was used, _____

what types of licenses are required to operate and maintain the equipment, _____

and the purpose of the station. _____

Radio Log

His Name: _____
His Call: _____
His QTH (location): _____
Frequency: _____
Mode: _____
His RST (signal report): _____
My RST (signal report): _____
Comments: _____

Example QSO

Station 1 WB2OGY

Station 2 KK4BSA

Station 1 CQ CQ CQ

CQ CQ CQ

This is WB2OGY Whiskey Bravo 2 Oscar Golf Yankee

Q CQ CQ

CQ CQ CQ

This is WB2OGY Whiskey Bravo 2 Oscar Golf Yankee calling CQ and listening

Station 2 WB2OGY this is KK4BSA Kilo Kilo 4 Bravo Sierra Alpha Over

Station 1 KK4BSA good afternoon. The name here is Steve Sierra Tango Echo Victor Echo and the QTH is Lawranceville, GA

Station 2 Hi Steve. The name here is is "TBD". And I'm also located in Lawranceville. Your signal is 5 by 9 when the QRM drops (*Note this is only Readability & Strength. Tone only applies to CW.*)

Station 1 You are also 5 by 9. What is the weather over there

-
-
-

Station 2 I've got to run. 73 and I'll see you further down the log. This is KK4BSA

Station 1 Good QSO, 73 from WB2OGY