

Lab Group # _____

Names _____

Can Radio Waves Be Blocked Investigation

Background: Radio waves are a part of the electromagnetic spectrum. Waves on the electromagnetic spectrum are all light waves. Radio waves help to transmit cell phone signals, but are not sound. The signals are received by your cell phone and then converted into vibrations to create sound. Radio waves are light that are great at carrying cellular signals because they are not easily blocked and can travel through many different types of materials.

Objective: To explore and test different materials to see if cell phone radio waves can be blocked.

Materials: 2 cell phones, felt, metal pot with lid (choose metal or glass), plastic box, foam squares, pie tins, cardboard, tiles, aluminum foil, styrofoam trays, vinyl, felt, bubble wrap, paper towels, tape (only for holding materials around cell phone if needed)

Procedure:

1. Have 2 people in your lab group get out their cell phones (*reminder, cell phones should only be used for lab purposes today) and share contact information by sending a text message between phones. (*Keep the text simple and appropriate)(*Be sure your cell phone is not silenced, ringers on.)
2. Place a call between phones. Not all cell phone plans work well in the building, so this will establish signal is working well between the phones.
3. Why don't all cell phones work in our school/building? Discuss as a group and respond.

4. Go to the supply counter and choose at least 3 different materials to test to determine if any of the materials can block your cell phone signals from each other. Only 1 cell phone needs to be covered (needs to be completely covered, ie. top, bottom, sides) by the material of choice (this allows you to still make a call and text with the other phone).
5. If your first 3 do not block waves, continue to investigate other materials if there is time.
6. Complete the following table on the back as you investigate the different materials.

Material	Text Went Through YES/NO	Call Went Through YES/NO	Radio Waves Blocked YES/NO

If you have not discovered a material to block radio waves, continue to explore more. If you have time to explore more, see if you can find more and hypothesize what they have in common.

Material	Text Went Through YES/NO	Call Went Through YES/NO	Radio Waves Blocked YES/NO

7. Were you able to block radio waves? _____ If so, what materials could block radio waves?

8. Discuss as a group why you think some materials do not block radio waves and some do. Write your ideas below.

9. Discuss as a group if there is a benefit to being able to block radio waves. Explain why or why not.

Once completed, continue to practice your Morse Code at <https://genemecija.github.io/learn-morse-code/>.