

WATTS UP???

Take-Home Lab

Learning about how a microwave works.

Warning: Make sure you are really cooking something in the microwave. I recommend a big pyrex measuring cup of water. Be careful---the water may not look like it is boiling, but it probably is. Change the water for each trial.

Since Microwave “Waves” (and they really are waves) all have the same energy, there is a little trick the microwave uses to provide high, medium, and low power. You should notice in this experiment that to provide a lower power, it stops producing microwaves. You can't SEE the microwaves, but you will see the wattage of the Watts Up meter go down and up. The Wattage will not go to zero, because the microwave will still turn a turntable, and keep the microwave emitter warm. I want you to run the microwave at THREE different settings: either high, medium, and low or 1, 5, and 10, depending on your microwave. You need a lot of water in the microwave, because I want you to run it for four minutes. If you need to, put in two or three coffee cups of cold water. Remember to change the water each time---be careful when it is boiling!!!!

You will need a stopwatch. You may have to do this experiment a few times to get used to the pattern in order to get good data.

Data #1: Record wattage of microwave on OFF: _____ (Watts)

Data #2: Set microwave to “high” setting for four minutes. Watch the Watts Up Meter carefully. Notice the maximum wattage. Notice how much it varies. Use the stopwatch to keep a running total of the number of seconds the Watts Up meter dips significantly below the maximum.

Max value: _____

Minimum value: _____

Number of Seconds (total) Wattage dips low: _____

Percent of time Microwave is on low wattage:
(time found above divided by 4 x 60 seconds): _____

Data #3: Set microwave to “Medium” setting for four minutes. Watch the Watts Up Meter carefully. Notice the maximum wattage. Notice how much it varies. Use the stopwatch to keep a running total of the number of seconds the Watts Up meter dips significantly below the maximum.

Max value: _____

Minimum Values: _____

Number of Seconds (total) Wattage dips low: _____

Percent of time Microwave is on low wattage:
(time found above divided by 4 x 60 seconds): _____

Data #4: Set microwave to “Low” setting for four minutes. Watch the Watts Up Meter carefully. Notice the maximum wattage. Notice how much it varies. Use the stopwatch to keep a running total of the number of seconds the Watts Up meter dips significantly below the maximum.

Max value: _____

Minimum Value: _____

Number of Seconds (total) Wattage dips low: _____

Percent of time Microwave is on low wattage:
(time found above divided by 4 x 60 seconds): _____