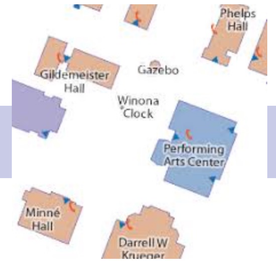
2024 Research & Creative Achievement Day
Early-Year Research & Creative Mentoring

Protected but active radio waves on WSU campus

Landyn Schroeder
Winona State University

Abstract

The present study is being conducted with the intention of identifying where, why, and what is transmitting a radio signal of 1419 MHz. This anomaly is intriguing because 1400-1427 MHz waves are protected. Because this is a protected wave, it was interesting that it was being transmitted on Winona State Campus which is where the team began research. To gain information, the research team cast the horn to the sky at an elevation of 37 degrees and in the directions of 344 , 213, 143, and 60 degrees bearing, respectively. Now that this baseline information has been collected, the team can narrow in on what portion of the campus is transmitting said anomaly. The horn is then pointed at an elevation of 37 degrees under the highest reading and cast to read both to right and left to determine which building is in question (due to the highest reading being in a general direction rather than towards a specific building). Finally, we will discuss with caretaking teams on campus to inquire about what could be transmitting this signal on a protected wavelength, from the WSU building. Overall, it's well understood that this transmission is likely accidental, though it is imperative to keep certain wavelengths (i.e. 1400-1427 mmHg) open for passive observation only, blocked out with purpose of no signals transmitted across this band.



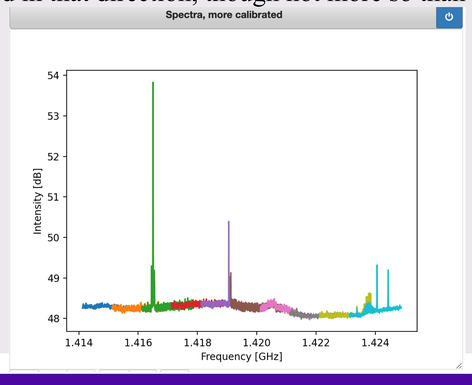
Introduction

In this study, the horn was utilized to narrow down the locations of a possible anomaly. There are protected waves declared by the United States Frequency Allocations Radio Spectrum to ensure open lines of communication for top priorities. Priorities may range from communication within the military radio astronomy observations, With a radio astronomy band ranging from 1400 MHz to 1427 MHz, a reading of 1419 MHz was recorded. While there no reason to believe this signal was intended to cause a disturbance, it was deemed worth investigating because we are trying to do radio astronomy and anomalies like the above can interefere with observations and data collection.

Key to radio bands and which are protected and used for different purposes.

Analysis

After analyzing the initial reading and designating the anomalies between 1400-1427, trials one through four were completed and the first reading was determined to have to strongest signal of said anomaly. From there, trial five was a confirmation reading which shows the reading is indeed registered in that direction, though not more so than the other



Methods

As a team, we ensured all readings were accurate. For analyses by performing in like weather, at 37 degrees altitude and in multiple directions (344 degrees, 213 degrees, 143 degrees, and 60 degrees). Then we moved closer, and set up the horn at 37 degrees altitude in directionsof 343 degrees for confirmation and 326 degrees bearing to further validate the general direction. We also used the same horn each time we went out for accurate readings.

In addition, the horn was raised by resting on a cardboard box to achieve the 37 degrees altitude and utilized the Measure and Compass apps on iPhone to measure degrees of bearing and elevation.

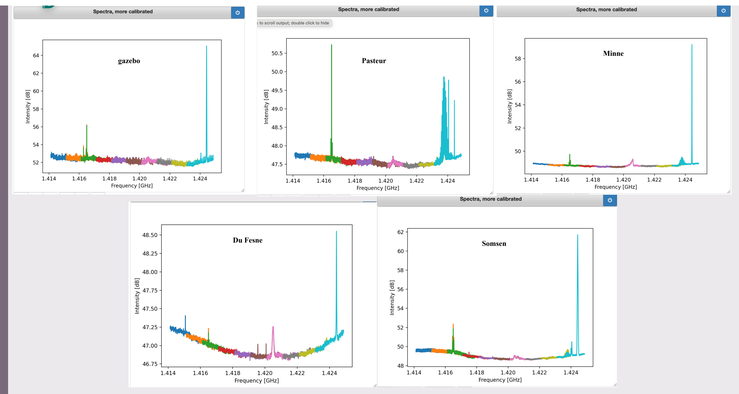
Trials zero through four were completed on a moderate weather day with little to no wind involved.

The fifth reading was taken on a morning with moderate wind and heavy clouds.

Results

The anomaly is recorded throughout the WSU campus in each direction, apparently not one more than another. Therefore, it will be worth continuing to investigate where the signal is being transmitted from in this protected radio band.

Data



Base reading, trial 1, 2, 3, 4, and 5 show on respectively (right to left and top to bottom)

Conclusions

Learn More

https://astrochart.github.io/

xb7256vp@go.minnstate.edu