Methods for Detecting Biology Affecting Electromagnetic Frequency Ranges Causing Havana Syndrome

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Abstract

Thousands are reporting the phenomenon of Havana Syndrome, both in and outside government, including very credible scientists, doctors and others of high credibility.

The stated, most likely cause is pulsed radio frequency energy. Considering the consequences of Havana Syndrome then, we need to determine methods for detecting this RF energy.

The research presented here describes techniques using software defined radios (SDRs) converted for use as spectrum analyzers, with code written to specifically detect biologically effective frequency ranges that could cause the symptoms of Havana Syndrome.

1. Introduction

It's stated that the most plausible cause of Havana Syndrome is pulsed radio frequency energy. Another question is whether it was used intentionally for just causing the symptoms or are these a side effect of a form of surveillance of devices, phones...etc.

The use of bio radars for detecting breathing, heart rates and also speech (Şeflek, Acar & Ercan, 2018) (Chen, Wang & Li, 2022), along with scientific proof that EEG data could also be on the reradiated, return signals for such bio-radar technology, (Wang et al., 2019) (Li et al., 2014) means that intelligence services and others using these to detect such information could also inadvertently cause the symptoms of Havana Syndrome.

Work from Sawyer & Canham refers to the Havana Syndrome events and the use of technology for Measurement and Signals Intelligence and also Measurement and Signature Intelligence (MASINT).

"It seems evident that neuroimaging technology holds great potential for MASINT, and for this reason alone there is the likelihood that state-sponsored intelligence services will attempt to employ this technology as an intelligence-gathering technique" (Sawyer & Canham, 2019).

The fact is that state-sponsored agencies, organized crime...etc would also intentionally cause these symptoms and have a use for such surveillance.

Thus, it's required that we detect the use of such technology whether it's used for surveillance, causing biological effects or both.

Regardless of how it’s used, such bio radars or biologically affecting electromagnetic transmissions should have a return signal that is reflected or reradiated, since a bio radar requires that and if used for causing biological symptoms the energy won’t be 100% absorbed, due to dielectric qualities some of the energy is reradiated. Resonant frequencies that reradiate significant amounts of energy would also very likely be used for causing Havana Syndrome symptoms, since each individual would be affected the most at their specific frequency ranges.

This work then uses the idea that there is reradiated, electromagnetic energy that is detectable should such technology be used.

It should then be possible to detect this signal based on the fact that proximitry to a detector's antenna would have an effect on the strength of a detected signal.

All electromagnetic waves can be thought of as a form of light, they're only different in their frequencies. So radio waves are actually the same as light, although they're not visible because our eyes cannot detect them, however electronics can be used for this.

You can think then of such bio radars, that could be used for RNM (Remote Neural Monitoring) of EEG data, as transmitting a “light”. You have a specific frequency though, of this “light” that you reradiate. Other humans and objects do not reradiate it the same as you do. These are called resonant frequencies and are unique for each of us (ARRL Handbook, 1992) (Gandhi et al., 1978).

This “light” can go though other objects and reflect off of metals and reach you.

When it reaches you and if it's at your specific frequency for your mind, then it will reradiate from you and this reradiated light will “flicker” based on the electrical activity (EEG) of your mind. This is because neural signaling modifies the dielectric qualities of the ionic fluids surrounding and in neurons.

The resulting effects to these dielectric qualities means that the reradiated signal is also modified in strength and phase (Wang et al., 2019) (Li et al., 2014).

Someone else, a perpetrator, can detect this “light” from further away and detect how it's flickering, even if it reflected off of a lot of objects to get there.

Your EEG then is in the flickering and is used for RNM.

The frequencies that reflect more off the skin’s surface would be used for breathing and heart rates and also speech (Şeflek, Acar & Ercan, 2018) (Chen, Wang & Li, 2022).

Because the information is in the flickering of this light, you only need the smallest signal for it since the flickering can be detected from far away.

For EEG and RNM then, the system uses the scientific fact that transmitting at a certain frequency will make your mind “glow” at frequencies that are visible to electronics. The flickering of this “glow” resulting from the EEG electrical activity of your mind.

This is then detectable from further away and used for RNM.
Humans cannot see the flickering, although electronics can. All devices that modulate radio waves use this principle.

So to prove RNM we need to detect this form of light, a radio wave that's being reradiated from you.

We also know that the research of Cazzamalli from the 1920's found that reradiated radio waves could be modified or modulated with EEG data.

Using an oscillator he transmitted radio waves towards a subject, with fluctuations in signal strength being detected with a receiver connected to a galvanometer (Cazzamalli, 1923, 1929, 1934, 1935).

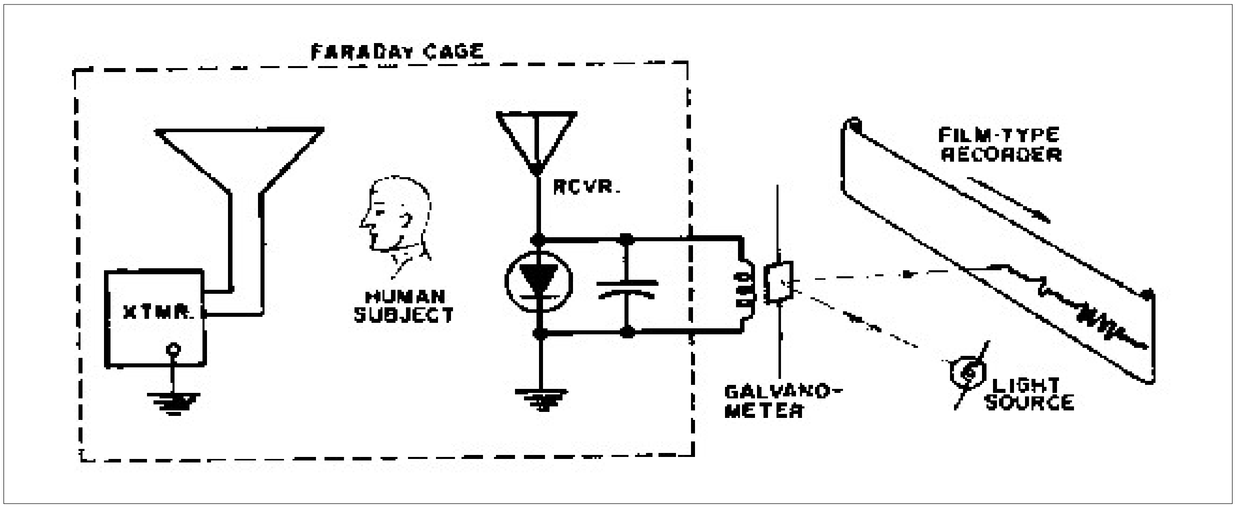

Figure 1-1 Cazzamalli's experiment.

So these oscillations could have been EEG data and thus the reradiated energy transmitted EEG data the same way a carrier frequency is used to transmit sound.

Since humans do not emit radio frequencies the existence of such frequencies with EEG data on them proves that RNM could be used.

This work is based on the idea that for RNM to occur then, a signal has to be transmitted from the person's mind that's being monitored, to the perpetrator and detecting these signals could be achieved based on the fact that they would be detected as an increase in RF energy when near a detector.

With regard to the biological effects of Havana Syndrome and electromagnetic radio and microwave harassment, humans are electrochemical systems with electrical and chemical signals used to manage biological functions. If these neurological signals could be affected it would explain the biological symptoms.

So the question is, how would this occur.

It's been shown that there’s evidence that the mind and body are affected by the electromagnetic waves that it receives and the way that these waves are modulated would also have an effect and, thus, cause the symptoms of Havana Syndrome. (Golomb, 2018) (IC Experts Panel on Anomalous Health Incidents, 2022), (Lin, 2017) (National Academies of Sciences, Engineering, and Medicine, 2020). Additionally, it’s been proven, through the use of the Hodgkin-Huxley neuron model connected in the form of neural networks, that slight temperature increases significantly beneath the thermal level are amplified as a result of a neural network's structure and significantly affect neural signaling. This is the mechanism for sub-thermal, biological effects that scientists have been searching for. (Mclean, 2022).

Thus, if someone transmits this "flickering light", a radio wave described earlier at your mind's resonant frequency, it will affect neurological electrical currents equivalent to how it flickers and this would cause the various biological effects.

These are scientific facts that are being used here to describe a remote neural monitoring system and how the same system could cause biological effects.

Cazzamalli's research and that of others has shown that electromagnetic waves can have a biological effect on humans.

Experiments have also been described (Jaski, 1960), where a weak oscillator was used to produce signals between 300 and 600 MHz.

Subjects were asked to indicate if they notice anything unusual and were not allowed to see the dial.

Quoting from Jaski: "...At a particular frequency between 380 to 500 MC for different subjects, they repeatedly indicated a point with ALMOST UNBELIEVABLE ACCURACY (as many as 14 out of 15 times)."

MC refers to megacycles or MHz in the quote above.

Also quoting from Jaski: "...Subsequent experiments with the same subjects showed that at the "individual" frequency, STRANGE THINGS WERE FELT. Asked to describe the experience, all subjects agreed there was a definite "pulsing" in the brain, ringing in the ears...".

So here we have a reference to a resonant frequency, which I'll describe in more detail, producing definite biological effects.

That quote is from 1960, showing that radio waves can cause tinnitus and now we have ringing in the ears or tinnitus sounds being reported as very common symptoms of Havana Syndrome or electromagnetic radio and microwave harassment.

So radio waves can get converted into sound.

A "Sonic" device was first mentioned along with the more logical possibility of microwaves, since they can be accurately directed, can get through walls and can cause sounds to be heard, according to the "Microwave Hearing Effect" described by Frey. (Frey, 1962).

Eldon Byrd, a specialist in medical bioengineering, who worked for the Marine Corps from 1980 to 1983 also found that the brain releases behavior-regulating chemicals resulting from electromagnetic waves.

"We could put animals into a stupor. We got chick brains--in vitro--to dump 80 percent of the natural opioids in their brains. The effect was nonlethal and reversible. You could disable a person temporarily, it would have been like a stun gun, we would have had a weapon in one year." (Pasternak, 1997).

The research of professor Michael Persinger, a psychologist and neuroscientist, indicated that if the same electrical patterns of activity that would generate a biological response were synthetically duplicated then that same biological response would also occur.

“The basic premise is that synthetic duplication of the neuro-electrical correlates generated by sensors to an actual stimulus should produce identical experiences, without the presence of that stimulus.” (Persinger, 1995).

It's also been shown that EEG brain oscillations have a functional role, “...brain oscillations seem to be fundamental for perception, cognition and behaviour”. (Thut, Gregor et al., 2012).

So if you could create or modify EEG electrical oscillations remotely then you could influence perception, cognition and behaviour and it has been shown that electromagnetic waves also have an effect on EEG oscillations. (Hinrikus et al., 2008).

Resonant frequencies then provides the mechanism for the remote transmission of frequencies that are converted into biological, electrical activity that would produce these effects.

This has also been noted by others:

“We feel that the phenomenon of head resonance may be important in the study of behavioral effects, blood-brain barrier permeability, cataractogenesis, and microwave bioeffects.” (Gandhi et al., 1978)

That is, radio waves transmitted at these frequencies will cause oscillating electrical currents in us and each of us will be most affected by a specific, unique resonant frequency.

HAM radio operators are warned about transmitting signals in these resonant frequency ranges:

"...the adult head, for example, is resonant around 400 MHz, while a baby's smaller head resonates near 700 MHz." (ARRL Handbook, 1992).

So just like an antenna that resonates to a specific frequency, the human mind does the same thing.

Now that is fascinating, the fact that we're tuned to specific frequencies, with the frequency that we resonate the most to being unique for each of us and this generates electrical currents in us.

It's a scientific fact then that just like a radio or a mobile phone, we can receive signals at specific frequencies.

Since they cause oscillating electrical currents in us and based on the fact that biology uses electrical currents, these resonant frequencies could be used to biologically affect us.

What then about transmission, what does electromagnetic research say about how we could emit or reradiate a signal?

How radio waves are created answers that question. A radio wave is generated whenever you have accelerating charged particles, such as ions or electrons, so an oscillating electrical current generates radio waves.

So when you have a conductor that receives radio waves, such as an antenna, the oscillating electrical currents that are generated in it also creates another reradiated radio wave.

These principles are used in antenna design, such as the yagi antennas placed on roofs for receiving television broadcasts. The last element of a yagi antenna receives the signal, which generates oscillating electrical currents. This then generates a reradiated wave, effectively reflecting the signal back onto the main receiving element.

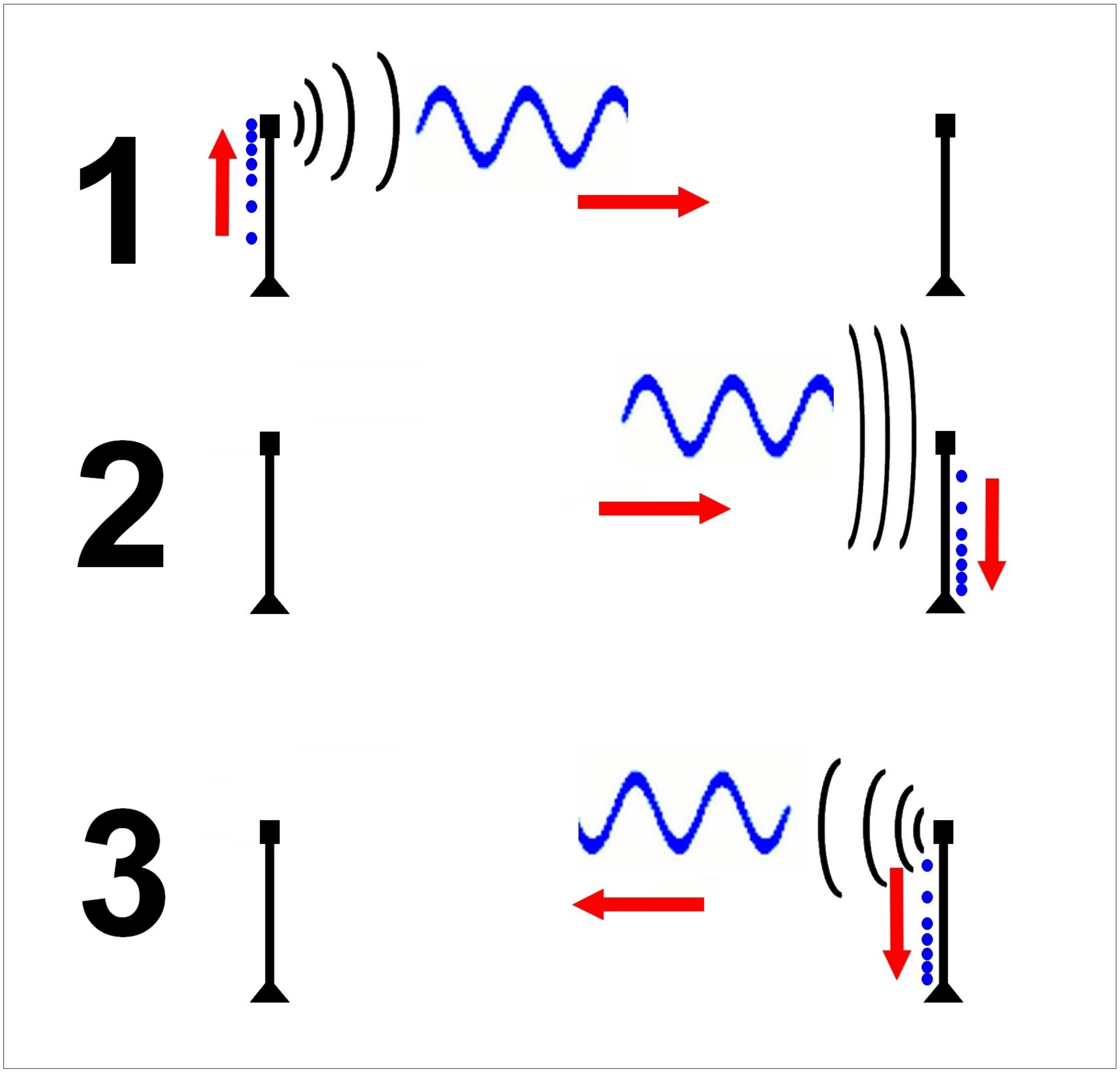

Figure 1-2 Radio Wave Transmission, Reception and Reradiation

In this image, (1) first the antenna on the left radiates electromagnetic waves. (2) the radio or micro waves reach the second antenna, moving electrons in the antenna.

That's what radio waves do when they reach conductors, they move electrons and other charged particles such as ions. (3) is where the interesting effect of reradiated energy occurs.

Those moving electrons create another radio or microwave and that's because that's also what moving or accelerating electrons do, they create radio waves.

Not all the energy then is received by an antenna for a radio or other devices, some of it is reradiated at the same frequency.

Each antenna will also have a resonant frequency. Think about it this way, when the radio wave reaches the antenna it will push electrons in a certain direction, creating an electrical current.

When the radio wave goes from a crest to a trough or vice versa, it will want to push the electrons in the other direction.

The electrons will also have a moment when they will want to start going the other way, resulting from the repulsive forces of the electrons, since there will be too many electrons on the one side of the antenna to continue receiving more.

If this moment coincides with when the radio wave wants to start pushing them the other way, then there is resonance.

This is when the radio wave energy is most effectively converted into electricity, otherwise it's just wasted, with the radio wave pushing them one way and the electrons wanting to go the other way.

Dielectric antennas also reinforce and amplify electromagnetic waves, resulting from the timing of the waves reflecting inside the antennas and their peaks and troughs coinciding with those of the additional received energy.

The width and length of the antenna then determines it's resonant frequency.

The effect on a human is exactly the same as an antenna at certain frequencies. Remember an antenna is just a conductor or dielectric that reinforces the electrical current or electromagnetic fields generated in it and humans also have dielectric and conductive qualities.

So humans are also antennas that reinforce electromagnetic energy at specific resonant frequency ranges.

Different human organs will have different resonant frequencies based on their size and so your resonant frequencies will be unique. That is, you will have your own frequencies that will convert the most into electrical currents and electromagnetic fields.

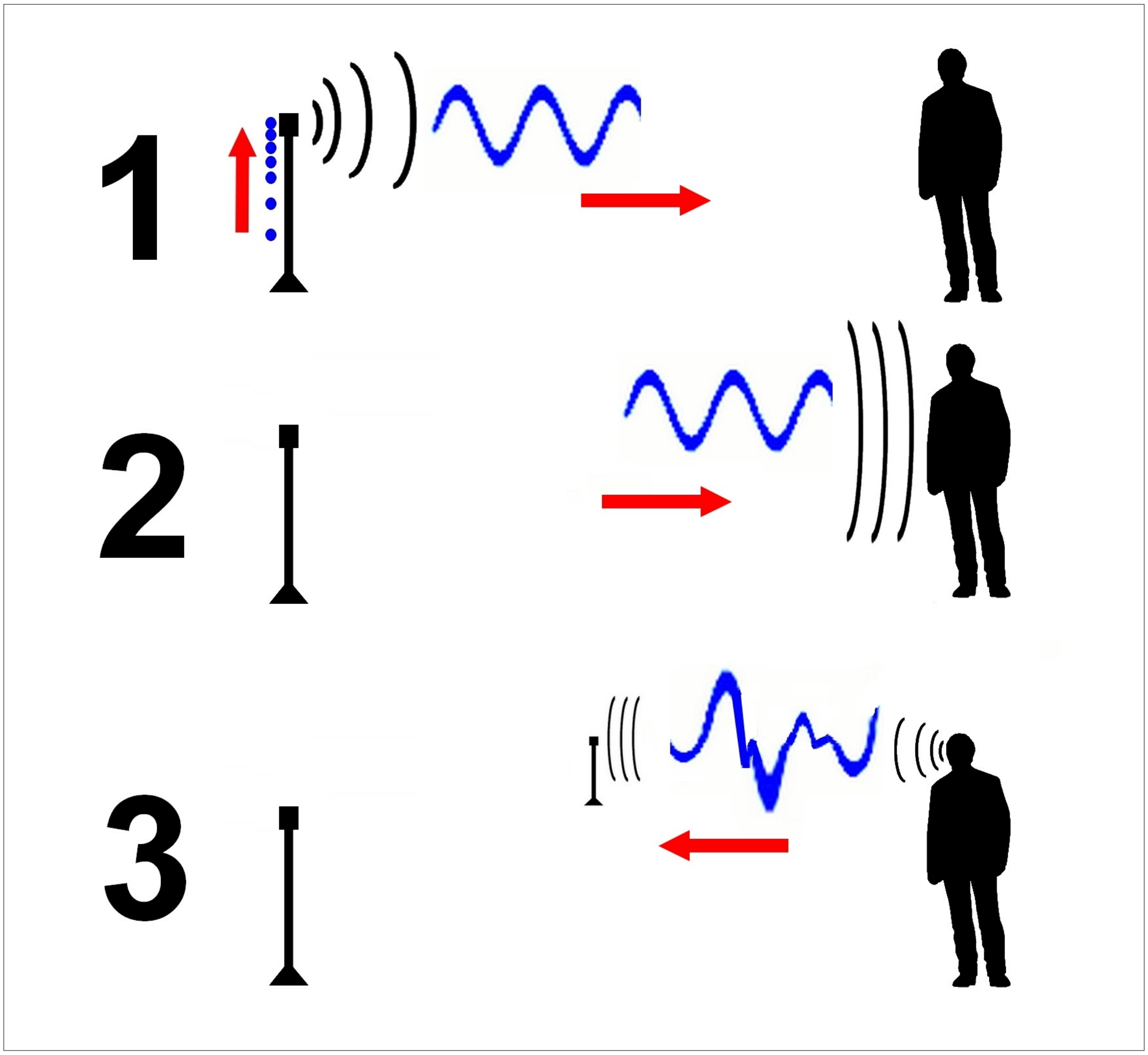

Figure 1-3 Human Resonant Frequency Radio Wave Transmission, Reception and Reradiation with EEG

This image shows how the same process occurs for a frequency that is the same as the mind's resonant frequency. The difference here is that the reradiated energy (3) is modified by the electrical activity of the mind. That is, it contains EEG data (Wang et al., 2019) (Li et al., 2014).

The same antenna that transmited the original signal or another can then be used to receive the modified waveform with this EEG data.

The mind then electrically resonating at a certain frequency generates a reradiated radio wave at that frequency, because of the oscillating electrical currents and electromagnetic fields within it.

Cazzamalli's research from the 1920's then and the research of Li et al (2014) and Wang et al (2019) and the scientific fact of resonant frequencies, describes a mechanism for RNM (remote neural monitoring) that state-sponsored intelligence services and others would use that could also result in the symptoms of Havana Syndrome.

So the mind can be both a receiver and essentially a transmitter at certain frequencies and these frequencies that we resonate to the most are unique for each of us.

The received electromagnetic wave then affecting biological electrical currents could also cause biological effects, as shown by various research (Golomb, 2018) (IC Experts Panel on Anomalous Health Incidents, 2022), (Lin, 2017) (National Academies of Sciences, Engineering, and Medicine, 2020).

This means that there's a way of transmitting at a certain frequency that would cause biological effects in specific individuals and the reradiated radio wave, modulated with EEG data, could be used for RNM surveilance.

This work describes methods used to successfully detect such resonant frequencies using the reradiated energy and based on the evidence and the research of other scientists proves a mechanism for Havana Syndrome.

2. Methods

The research, methods and results described here are the culmination of a lot of work. These are the methods used that achieved our objectives.

2.1 Radio Frequency Energy Detector

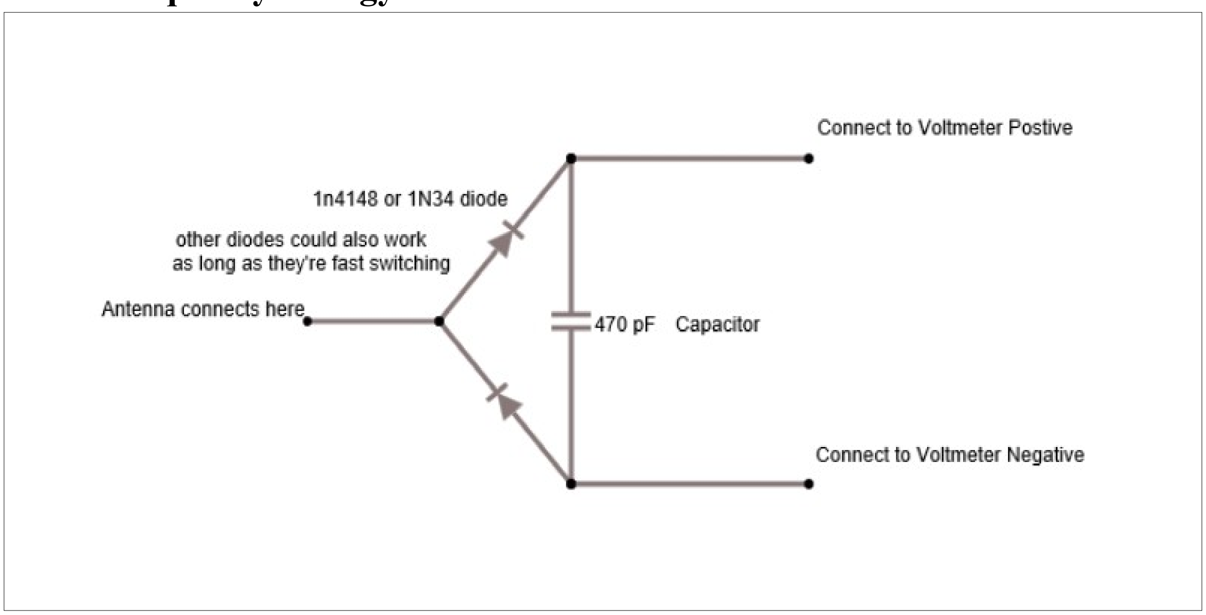

Figure 2-1 RF Energy Detector

The successful detection of RF energy being emitted or reradiated began with this basic device.

The diodes allow the oscillating current that is generated from radio waves on the antenna to place electrons on the one side of the capacitor and remove them from the other.

So the radio waves produce a voltage difference that can be measured with a voltmeter.

A very basic, although very effective and useful device.

It could detect RF energy from myself sufficiently far away from the antenna to be considered a far field effect, caused by radio waves. That is, radio waves that could be received over far distances.

I also used a filter on the front to prevent static and an amplifier was used to increase it's effectiveness.

So using this device I knew that I was emitting or reradiating RF energy. The next objective was to determine the frequency of these radio waves.

2.2 RTL SDR Software Defined Radio Spectrum Analyzer

To achieve this an rtl sdr (software defined radio) usb device was used as a spectrum analyzer.

I wrote code to process signal data, the I and Q signal strengths for specified frequency ranges that was provided by another rtl-sdr package (Markgraf et al., 2012).

Using these signal strengths the code detects reradiated energy by determining differences in signal strength when nearer and further from the antenna.

So the same principle as the RF energy detector in that signals will be stronger when nearer the antenna, although here we're detecting signals of a specific frequency.

Of course finding a signal of a specific frequency is very revealing, because it means that you can be affected by that frequency and not others.

This is an image of the graphical interface for the code system.

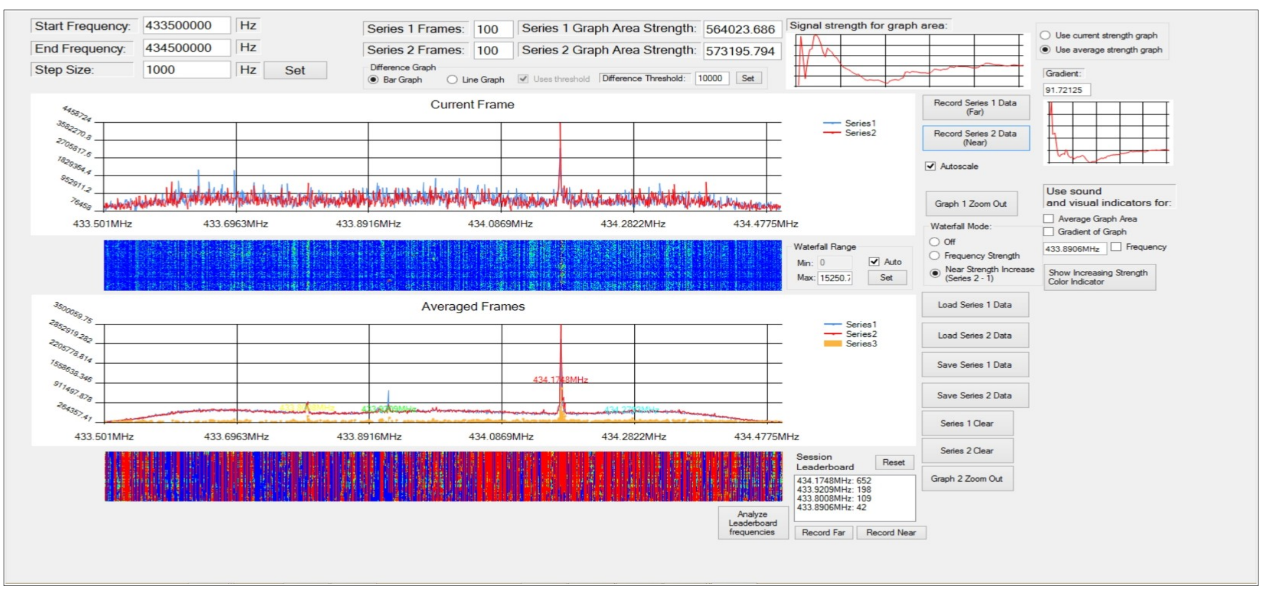

Figure 2-2 RTL SDR Reradiated Energy Detection System

The program and the code can be found here (Mclean, 2017):

https://github.com/ClintMclean74/SDRSpectrumAnalyzer

A newer, faster and more efficient version of this code system (Mclean, 2021), that can also use all GNU Radio compatible SDR devices, is here:

https://github.com/ClintMclean74/SDRReradiationSpectrumAnalyzer

2.2.1 Using Near and Far Averaged Data for Detection of Differences in Signal Strength

The first useful feature of this code is to be able to separately record a near series and a far series of data.

So data is recorded when near the antenna and another series of data recorded when further away. The strength differences are then compared.

The data is also averaged, since the strength of a signal will often vary and we want to determine whether it's on average stronger when we're nearer the antenna.

It's also very useful for extracting a signal when there's a lot of RF noise around it.

So a signal of a consistent strength, that has a greater average strength than the surrounding noise, where the surrounding noise at times even exceeds the signal itself, can still be detected.

Note how averaging the data extracts the signals from the noise in this image.

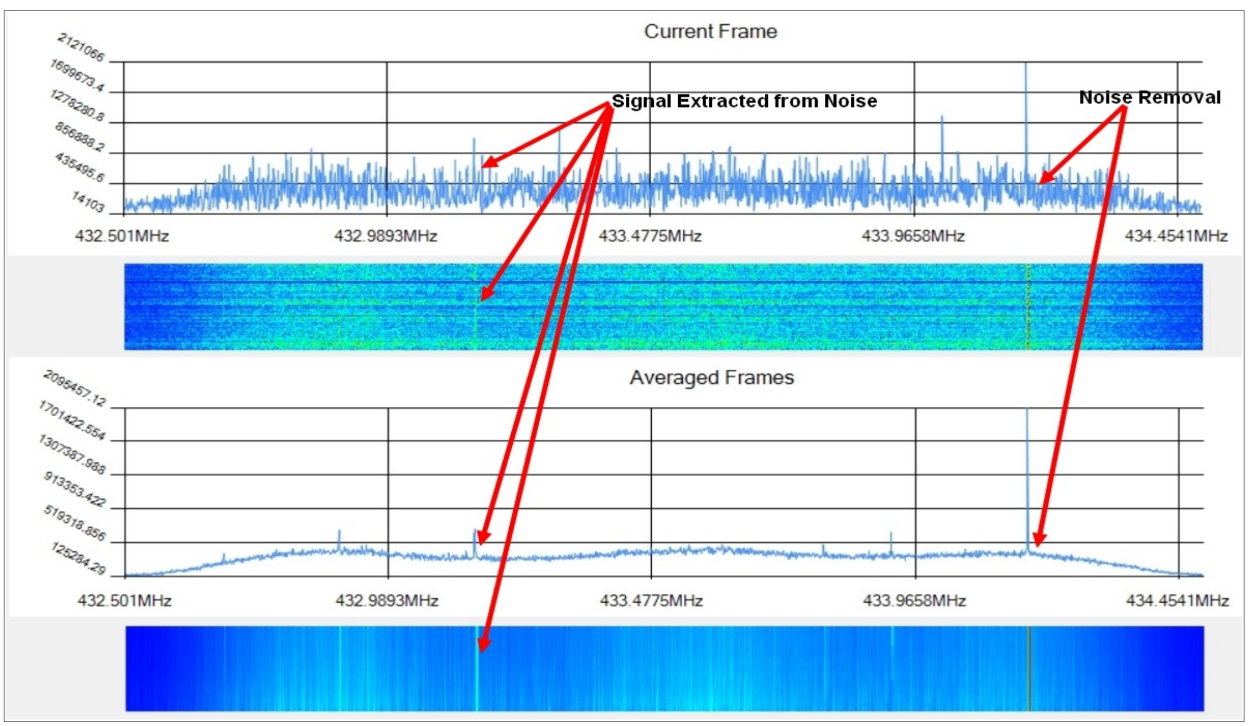

Figure 2-3 Extraction of Signals Using Averaged Data

Frequencies can also be zoomed in on, with this image using near (red) and far (blue) series data, showing the difference in signal strength when near the antenna.

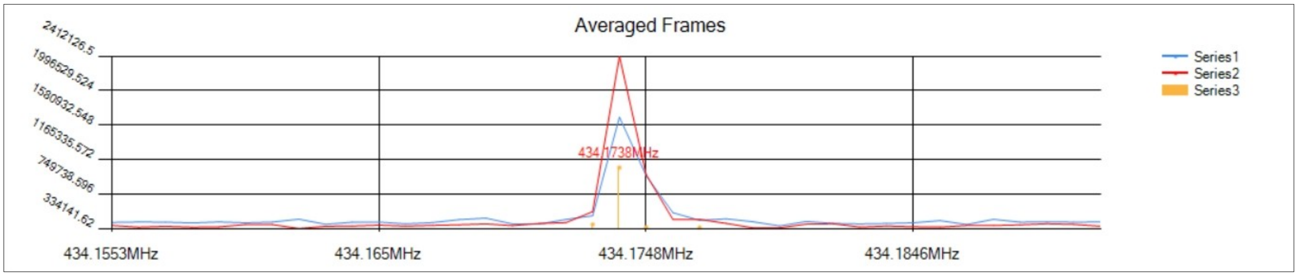

Figure 2-4 Near and Far Series Data

The gold bar shows the magnitude of the strength difference.

2.2.2 Linear data instead of logarithmic dB units

Another important feature is the use of linear values for the spectrum data produced by the rtl sdr.

dB units are often used for measuring signal strengths of frequencies, because it allows very strong signals to be shown on the same graph with very weak signals.

However, if we've got a reasonably strong signal and we want to determine the difference in it's signal strength when closer to the antenna, then using linear units, just from the voltages themselves, will visually show a far greater difference in strength.

In this image, the graphs are of the same near and far signal strengths. The increased signal strength of the near signal is a lot clearer though, using linear units than the logarithmic dB units.

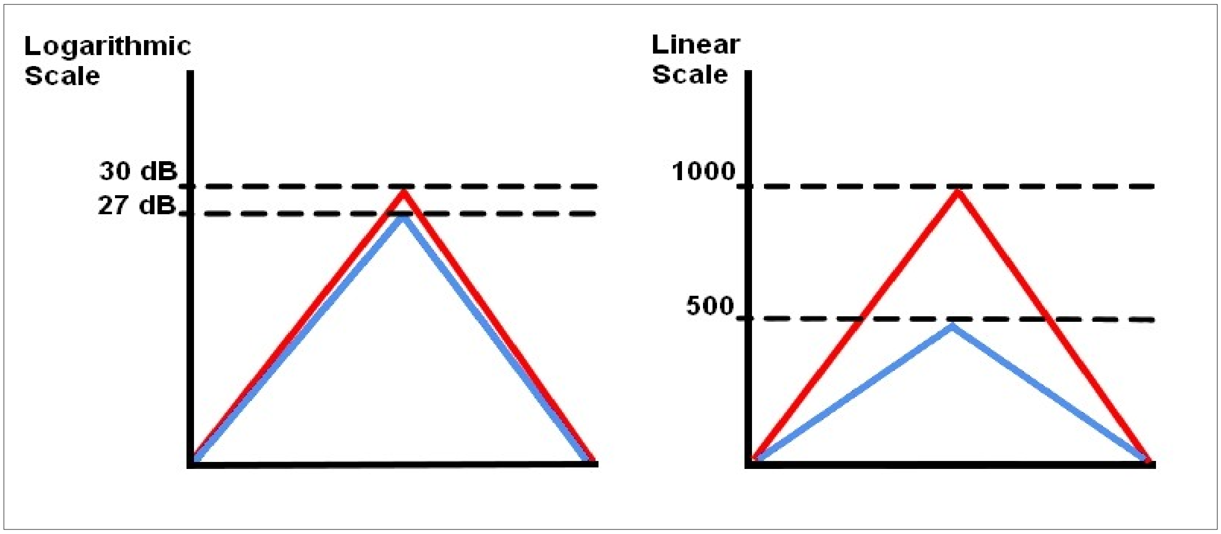

Figure 2-5 Logarithmic (dB) vs Linear

2.2.3 Yagi and Satellite Dish Directional Antennas

Using directional antennas increases the detection effectiveness, because we can create a scanning region that receives more of the reradiated radio energy from ourselves.

When we're not in the region and if it's not pointing towards the original source of the energy, then it should be a lot less.

When we move into the region it can then receive the energy from ourselves.

Since the directional antenna is not receiving a lot of energy from the original source, the extra energy from us should be far greater so it's a lot easier to detect, as shown in this image.

A normal antenna receives the electromagnetic energy from all around it, so the extra reradiated energy is not as noticeable.

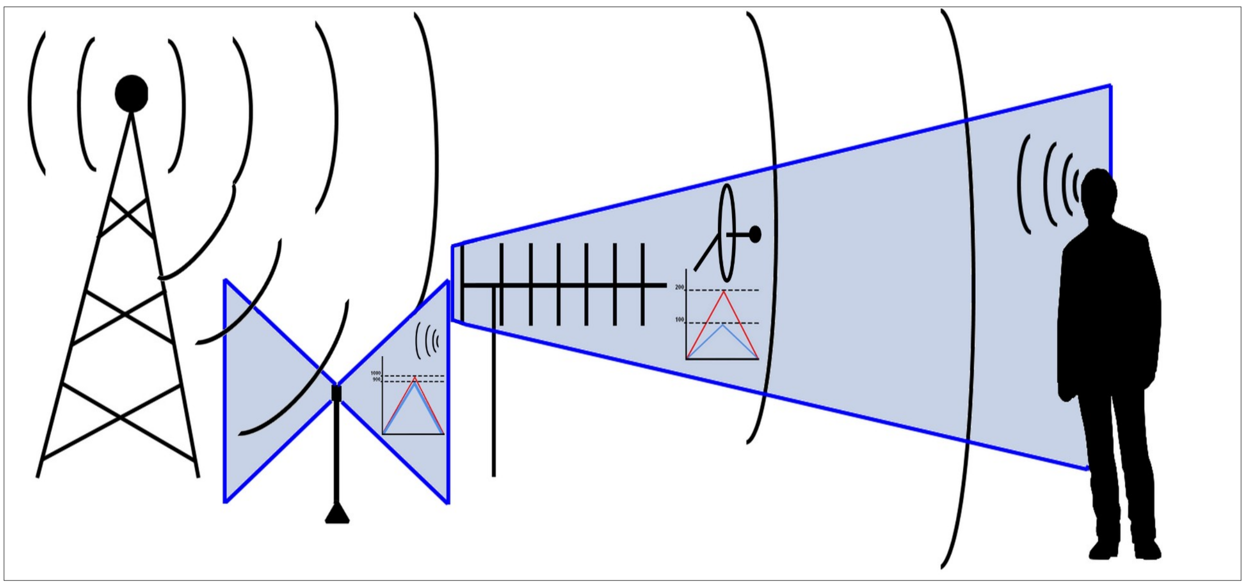

Figure 2-6 Directional Yagi and Satellite Dish Antennas

The graphs in this image show the signal strength (blue), when further away and not in the antenna's scanning region. The red graphs show the increased signal strength when closer and in the scanning region.

Note the far more obvious difference in signal strength with the directional yagi and satellite dish antennas.

A television satellite dish was successfully used for this research and detected signals even though it wasn't ideally designed for the frequency range of the signals that were detected. For signals in the 400 to 500 MHz range a larger dish is more effective, because of the longer wavelength.

A 7 element yagi was also designed for frequencies around 434 MHz and was successfully used.

The yagi antenna can also be used for finding where the original signal is being transmitted from.

2.2.4 Using Frequency Strength for a Selected Graph Area over Time

Graphing frequency strength over time allows us to see the immediate effect of proximitry on the strength of the frequency or frequency range.

Either a frequency can be selected, or a range of frequencies, just by zooming in on the graph.

So we can move closer to or within the antenna's scanning region and note the recorded effect at that point in time.

If the frequency's strength starts increasing, based on our movement towards the antenna, then we know that the extra energy is from us and we can detect and see on the graph the moment that it starts increasing.

Also, the minimum and maximum values for the visible range are set to the most recent values, effectively zooming in on the changes, so even small changes in strength can be noticed.

The red arrows in this image, show the signal strength over time for a single frequency and also a frequency range.

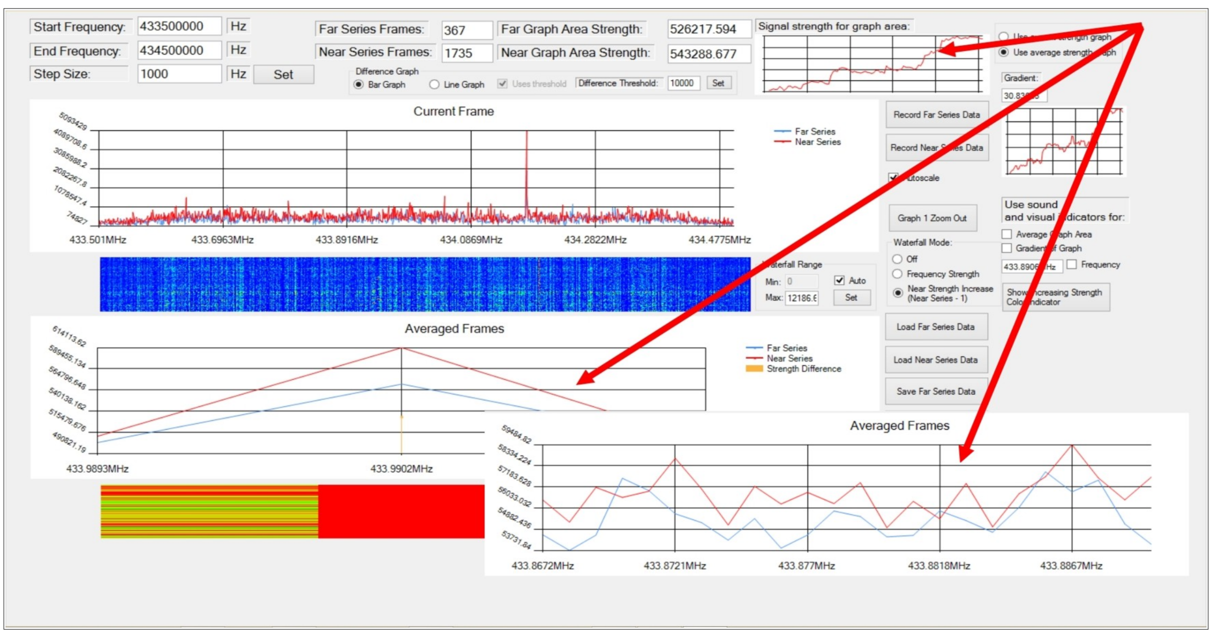

Figure 2-7 Signal Strength Over Time for a Frequency or Range of Frequencies

Selecting a frequency range also allows frequency hopping signals to be detected.

Because the signal's frequency could be changing it wouldn't produce a clear signal, looking more like radio frequency noise. Instead what could be noticed is an increase in the averaged noise floor's strength for the region that the signal is in. That's shown in the inset for the image above.

The increase in energy for that region could then still be detected and clearly seen in the time based graph the moment you move nearer the detector, because the reradiated energy is increasing that entire regions detected energy.

This is also useful for detecting changes in strength for a signal that is more gradually shifting in frequency.

Here's this image illustrates a signal that has changed over time from one frequency to another.

These changes can still be tracked though, by evaluating the frequency range that the signal is in.

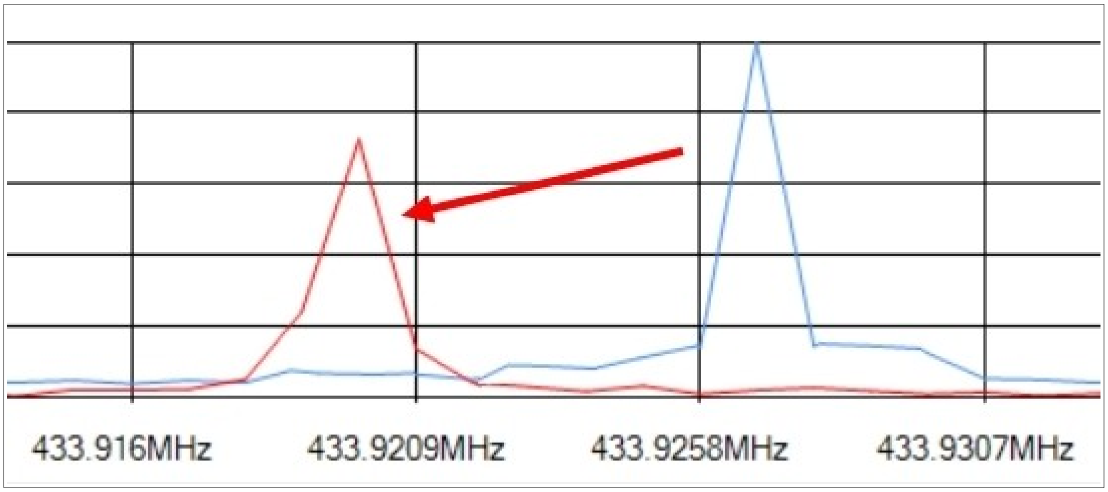

Figure 2-8 Signal Changing in Strength and Frequency

What occurs though, if the transmitted signal itself is fluctuating, increasing and decreasing in strength. Illustrated in this image with the graph when near the antenna (in red) being weaker.

So when moving nearer the detector it might not increase the detected energy if the transmitted signal itself is getting weaker.

Here's where a gradient of the signal's strength can be used.

2.2.5 Using the Gradient of the Time Based Graph

Since the strength of a frequency or frequencies could vary by themselves, because of transmitter fluctuations and other causes, we need a way of determining the effect of proximitry on signal strength changes and not just whether it increases.

We want to determine then whether a frequency that is decreasing in strength decreases at a slower rate or whether an increasing signal increases at a faster rate, when moving closer or within the antenna's scanning range.

This would prove that we are in fact providing an increase in detected energy from ourselves, even though the frequency strength itself is decreasing or increasing.

So to achieve this we use the gradient of the time based graph.

Should the gradient graph increase because of our proximitry then we know that's it's the extra reradiated energy from ourselves, regardless of what the general trend of the transmitted signal is doing.

Here in this image, there is a trend of a generally decreasing strength for a frequency range.

However, the gradient for this graph shows that it is increasing. It's still negative at -9.865, although it is increasing. This means that the descent of the signal strength is slowing.

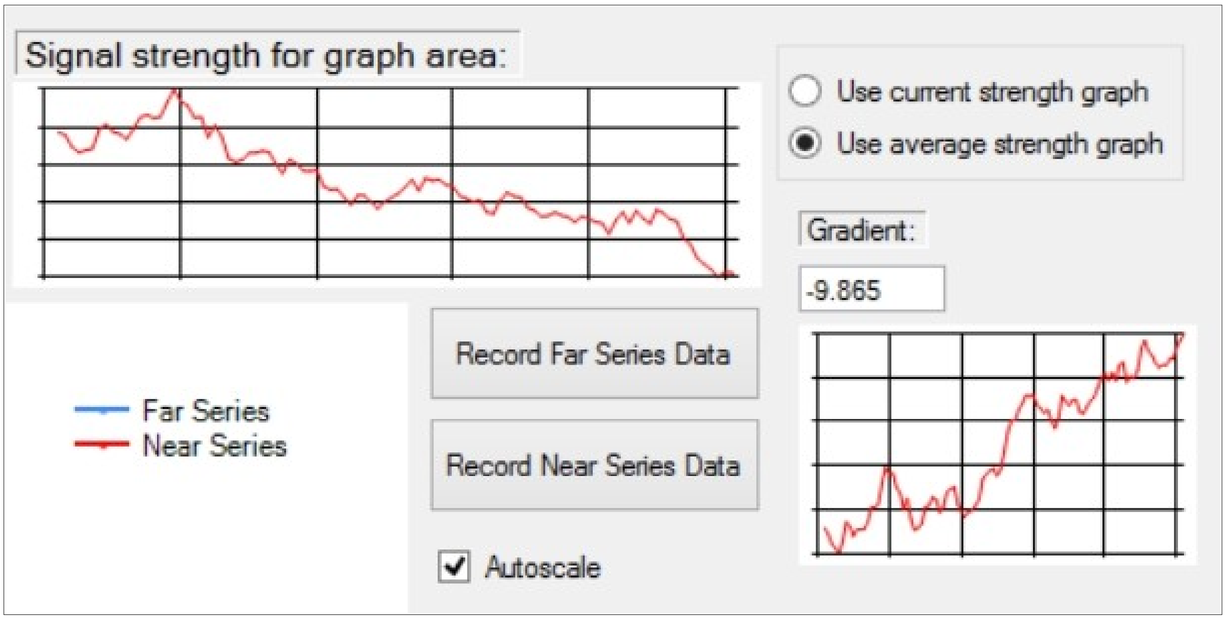

Figure 2-9 Signal Strength Over Time and it's Gradient

If the strength for a selected frequency range is decreasing then and if a movement towards the antenna produces a change in the gradient, increasing it, then you know that although the signal strength is still decreasing, it's descent is slowing because the antenna is receiving the extra reradiated energy from yourself.

That is, the signal strength is decreasing at a slower rate as a result of the received reradiated energy.

It works the same way for an increasing strength signal that increases at a faster rate resulting from the received reradiated energy.

The gradient for a signal that's increasing in strength then shows that it's increase is accelerating, because of the extra reradiated energy that's being detected.

This is how you can detect reradiated energy even if the transmitted signal strength is generally in a trend of decreasing or increasing strength, the gradient should always initially increase or show a change towards increasing, when moving towards the antenna.

2.2.5 Sound and Visual Cues for Indicating Increasing Strength Levels

It was found that the reradiated signals were being detected so successfully that it was required that sound and visual cues be used to indicate increasing signal strength from further away, where the graphs could not be seen.

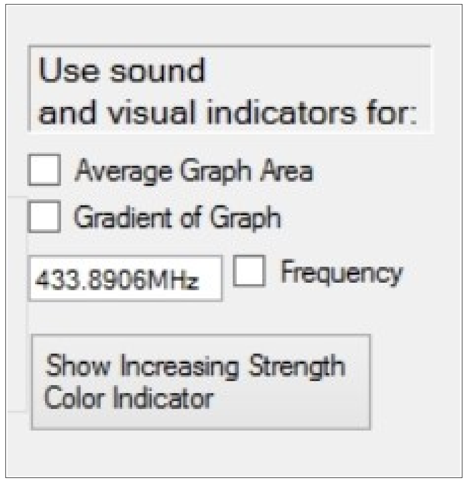

Figure 2-10 Sound and Visual Cues

Here this image shows how we can select sound and visual cues for the changing strength of a specific frequency, a frequency range (the selected area on the graphs) or the gradient of the changing strength levels for a selected frequency range.

So when the strength of the selected frequency, or range of frequencies, or the gradient of the strength is increasing, then a sound is produced, with the frequency of the sound corresponding to the degree of the increase.

For the visual cues, a large red or blue rectangle is shown, with red indicating an increase and blue a decreasing signal strength.

This used in conjunction with the satellite dish and yagi antennas successfully detected reradiated energy from around 10 and more meters away, with the cues indicating increasing strength levels when moving into the dish's scanning region.

3. Results

3.1 Detection Using the RF Energy Detector

The first successful detection of an emitted or reradiated electromagnetic frequency from myself was achieved using the basic radio frequency energy detector shown in Figure 2-1.

I would move nearer the device and the energy detected would increase, further and it would decrease.

A filter was placed on the front and experiments performed to make sure that it wasn't static electricity.

It could also detect movement from sufficiently far away for it to not be a near field effect. That is, it's a far field effect where the energy can propagate over reasonably far distances.

From the filter that I used for higher frequencies in the MHz range, I had an idea that it would be of a reasonably high frequency. I wanted to find out though, whether it was of a specific frequency.

In order to do this the rtl sdr was used.

3.2 Detection using an RTL SDR (Software Defined Radio) Device

The detection of the frequency of the reradiated energy first occurred after modifying the code system that I wrote for the rtl sdr to not use dB units, so that differences in signal strength could be more easily detected. I also used a satellite dish for this detection.

I found that a specific frequency significantly reacted to my movement when nearer and withing the dish's scanning region, inside a room.

This image shows the strength of the signal, when within the dish's scanning region (red) and further away, outside (blue). A very significant difference in strength.

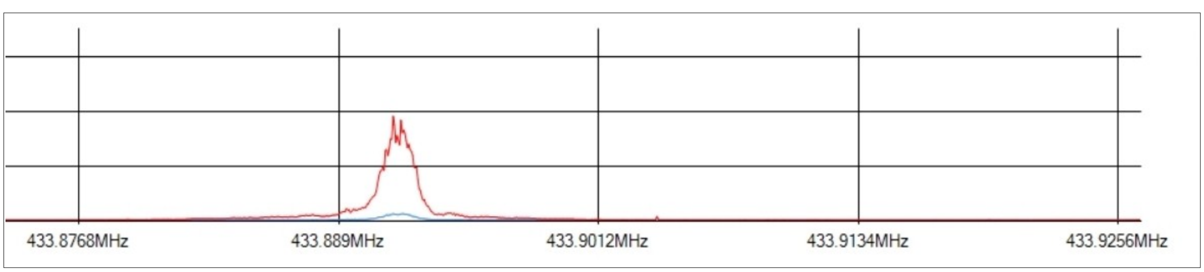

Figure 3-1 Graph showing Detection of Reradiated Energy From the Signal

Other frequencies do not react like this, they actually often reduce in strength when moving closer to a detectors antenna, because of the effect of blocking the signal. Most radio and microwave frequencies will either be mostly absorbed or go straight through.

The data for these experiments is also averaged from hundreds of samples, so producing an effective measure of signal strength over time.

So radio and microwave signals in these frequency ranges won't normally reflect or reradiate like they do off of metal. Yet, I have a signal around 434 MHz that I am strongly reradiating.

The only frequencies in these ranges that the human body can strongly reradiate, are called resonant frequencies.

These could have serious health implications, either unintended, as in electrosensitivity or intended, as what most likely happened with Havana Syndrome and what intentionally occurs with electromagnetic radio and microwave harassment.

This is a time based waterfall image of the signal that's been detected.

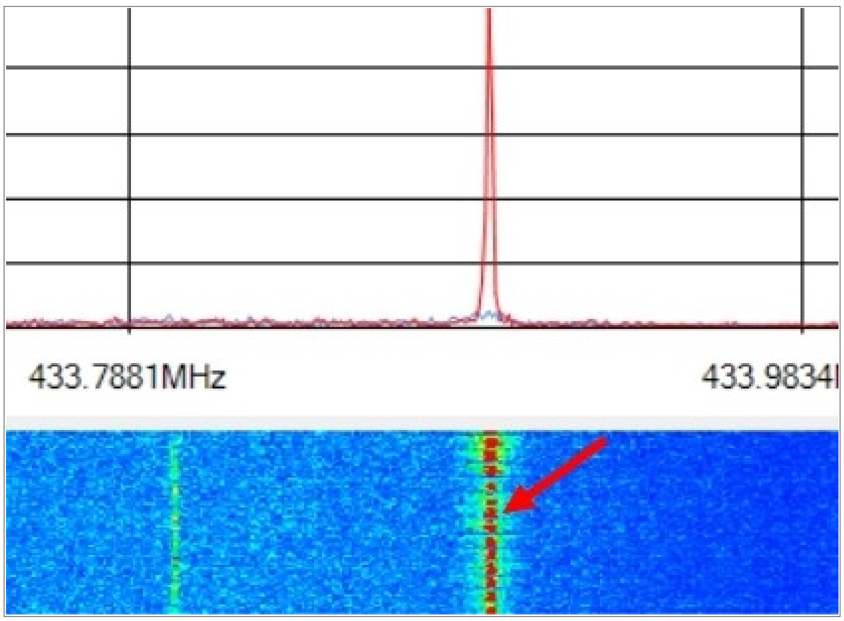

Figure 3-3 Waterfall Image Showing Pulses

Note that it's pulsed. That is, the signal varies strongly in strength from red to green to blue.

There has been work showing that the effect of electromagnetic waves on brain waves (EEG) is a lot stronger when those electromagnetic waves are modulated with other frequencies.

“The effect of microwave radiation on the EEG rhythms depends on the modulation frequency and has non-thermal origin. The effect is stronger at modulation frequencies higher or close to the EEG rhythms frequencies.” (Hinrikus et al., 2008).

So a pulsed radio wave, such as this signal at 434 MHz, should be a lot more effective.

Detecting this signal was a very significant achievement, since it proved that I was reradiating a radio wave at a specific frequency.

That is, I was receiving a radio wave at around 434 MHz that was generating oscillating electrical currents or electromagnetic fields within me and this oscillating energy would then generate a reradiated signal, at the same frequency that could be detected from further away.

So not only was I receiving a signal, I was also essentially transmitting it. Devices, such as RFID, bugs...etc, significantly use this reradiation effect for receiving and transmitting electromagnetic energy.

This has very serious implications for Havana Syndrome or electromagnetic radio and microwave harassment and also electrosensitivity.

After I detected this signal it went away for around a week or so. When it returned I thought I'd see if I could detect it from further away.

I had already achieved the most important objective of detecting it, however it gets even better than this.

3.3 Detection using a Satellite Dish and Sound/Visual Cues

I started finding that I could detect this signal being reradiated from myself from reasonably far away, so far in fact that I had to write new code for the rtl sdr detector to tell me, using sound and visual cues, whether it was detecting the signal from a range further than what I could see the graphs.

So using a satellite dish, with a notebook computer connected to an rtl sdr and the dish, I successfully detected the reradiated signal from around 12 meters away.

Now this is very significant, because a satellite dish for receiving television signals, GHz frequencies with smaller wavelengths, is not designed for detecting signals at around the frequency range that I was detecting.

The frequency that I was detecting is of a lower frequency and because it's got a longer wavelength it requires a bigger dish.

The fact that I could detect it from there, using this satellite dish and an rtl sdr, means that it could be detected from a lot further away, using antennas and electronics specifically designed for these frequencies and for long range detection.

The satellite dish was mostly for directivity, not necessarily to detect signals from satellites. That is, it was used to create a region that I could walk into and out of to detect the reradiated energy, regardless of where the frequencies originated from.

Using the sound and visual cues that I wrote for the rtl sdr code I could determine that when walking into the region that the reradiated energy was being detected.

Here's the graph for the signal that was detected and even though it's from around 12 meters away there is still a significant increase in strength.

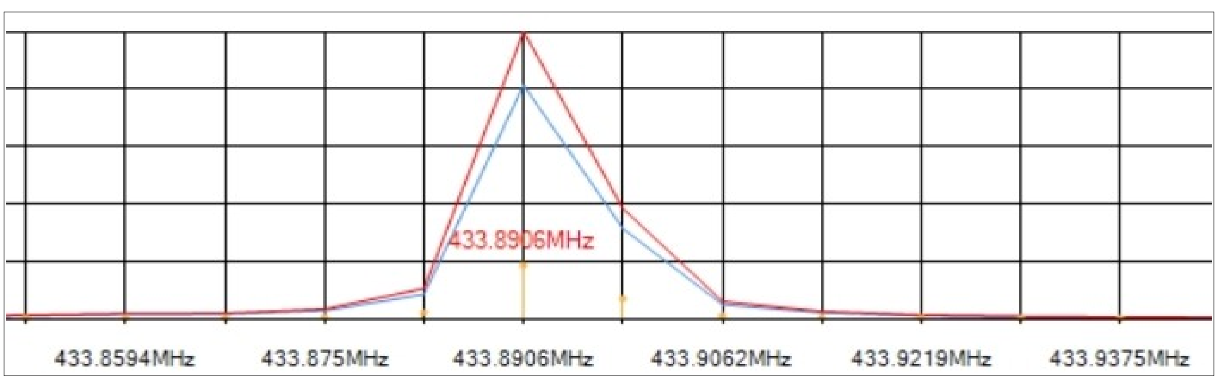

Figure 3-5 Graph of Reradiated Energy Detection From Signal Using Satellite Dish from around 12 meters

The experiment's results were repeatable, in that I would walk into the dish's scanning region and the detected energy would increase, out of it and it would decrease.

After this signal had gone I worked on detecting others.

3.5 Using the Time Based Graphs for a Frequency Range

I noticed a strange signal after the other one went away, that varied in both strength and frequency.

The following describes the use of code to detect these and along with the ability to evaluate a range of frequencies for resonance, instead of just a single frequency.

This could possibly detect a form of frequency hopping, where signals would quickly change frequency over a certain range.

Here this graph shows a selected frequency range, from 433.88 MHz to around 433.90 MHz, where there isn't an obvious signal.

This image shows how resonance can still be detected with the extra reradiated energy elevating the averaged data, the red graph, for the frequency range.

The red arrows showing where on the time based signal strength graph and gradient graphs movement occurred towards the antenna.

Notice how the signal strength and gradient of that graph both increase, indicating the extra reradiated energy the moment movement occurs towards the antenna.

Figure 3-7 Using Signal Strength and Gradient Graphs Over Time to Detect Reradiated Energy from Frequency Ranges

So this could be used to evaluate signals that slowly or even quickly change in frequency for the selected range.

The gradient graph could also be used to determine the effect of moving towards the antenna, on a signal that is already increasing or decreasing in strength. That is, it should either increase faster or decrease slower, both of which will show as an increasing gradient.

So although the signal that I originally detected has gone away, using this code system I can continue detecting reradiated energy from other signals.

3.6 Verifying Resonance And Detecting Resonant Frequencies From Devices

Detecting the signal I was reradiating was very significant. These signals could have various origins, although it's also been found that various devices, such as computers and television decoders, produce signals in these resonant frequency ranges.

Considering the possible biological effects, it should be illegal for any device to do so.

These devices should not be transmitting wirelessly on those frequencies. The interesting thing is that the frequencies that I've detected aren't for wifi or bluetooth. So what are they being used for?

This has serious implications for electrosensitivity and could also be used for passive bio radars that would use the frequencies these devices transmit.

These can be detected using a yagi antenna and from a television decoder I detected a certain signal at 433.42 MHz, which interestingly is very close to the other, externally transmitted signal that I detected and is also in the resonant frequency range.

It also emits other signals, which are used as a carrier wave that a television or other device can tune into, although it's for connecting to such devices with a cable.

The signal strength though, means that you could tune into these signals without difficulty.

These frequencies can be adjusted in the settings from 433 MHz to 855 MHz. I found that I could use these to show that different frequencies have different levels of resonance.

The following image shows the energy that I was reradiating, using the decoder's frequencies. This energy was detected standing just in front of the rtl sdr's yagi antenna and with the decoder further away, out of the antenna's main receiving region.

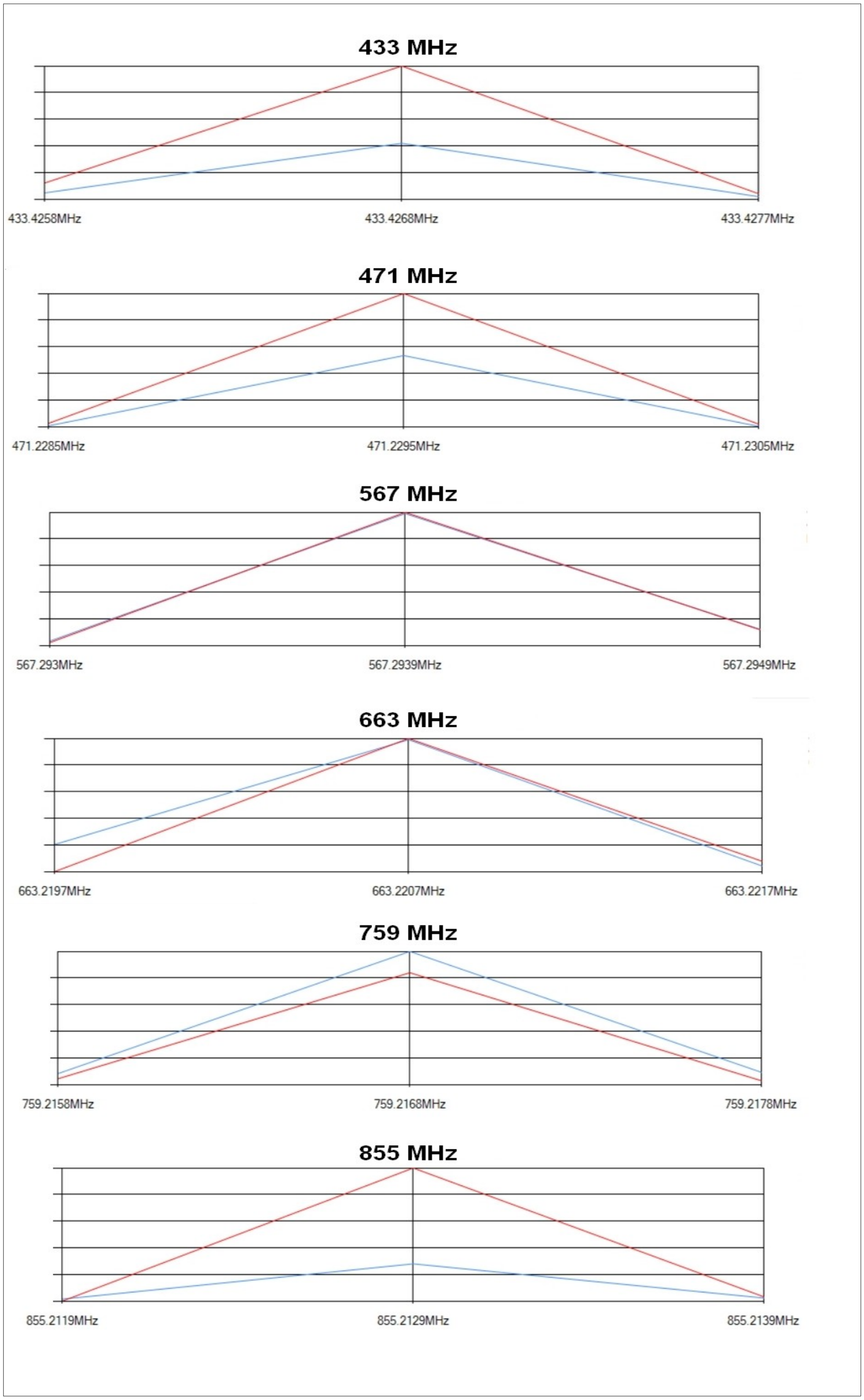

Figure 3-8 433 MHz to 855 MHz Signals Produced by a Television Decoder and their Reradiated Energy

What I found was that since 433 MHz is very close to the signal I detected, it produces a lot of reradiated energy (red).

The 471 MHz signal also produces a lot of reradiated energy. It could be because it's from another organ, with a resonant frequency in the 471 MHz range.

The significant thing here is that 567, 663 and 759 MHz frequencies do not produce the reradiated energy of the others, with a decrease in energy detected for the 759 MHz signal.

Interestingly, the 855 MHz signal shows that it's also a resonant frequency. This could be that it's close to a harmonic of the 433 MHz signal (2 × 433 MHz).

All objects that are conductors or have certain dialectric qualities have resonant frequencies and since body organs can have both conductive and dielectric qualities, they each have their own resonant frequency.

This could have consequences for organs such as the heart.

Research indicates that the heart rate can be both slowed and increased using weak electromagnetic waves, that do not cause any heating effect, that is at intensities beneath the thermal level (7–12 mw/cm2).

Quoting from Presman & Levitina:

“Irradiation of the ventral parts of the body slowed the heart, and irradiation of the dorsal part of the head speeded it. It is suggested that the effect observed was the result of reflex autonomic reactions provoked by the direct action of the microwaves on the superficial reflexogenous zones, and that the effect from irradiation of the head was produced by action on brain cells...” (Presman & Levitina, 1962).

So heart rates could be affected in various ways using electromagnetic waves and these electromagnetic waves can be very weak.

Very interesting considering that body organs have resonant frequencies and will receive more energy from electromagnetic fields at these frequencies.

Devices using these frequency ranges then could be responsible for electrosensitivity, causing various biological effects, since at resonant frequencies significant amounts of electromagnetic energy are received.

These frequencies then need to be declared illegal, whether from home devices or transmitted from further away, since they could cause biological effects and also transmit frequencies that effectively illuminate the user of such devices that passive bio radars could receive from further away.

4. Discussion

I cannot emphasize enough how important detecting these frequencies could be.

Think about this for a moment. Someone can transmit a signal at a certain frequency that will generate electromagnetic fields in you that would affect the biological electrical currents in your mind and they can do this from far away, without your knowledge.

These signals can biologically affect you and the reradiated electromagnetic wave could contain EEG data for remote neural monitoring, which the research of Cazzamalli and other research shows (Cazzamalli, 1923, 1929, 1934, 1935) (Wang et al., 2019) (Li et al., 2014).

Your resonant frequency is also unique, in that it's a specific frequency that will affect you the most.

The research here shows that such frequencies do exist and that signals exist on these frequencies that are received by us just like antennas. They cause resonant electromagnetic fields that affect biological electrical currents and are reradiated as an electromagnetic wave of the same frequency that research shows could be modulated with EEG signals.

There are obvious military applications of this. The fact that the body has unique resonant frequencies means that serious damage would be caused just using the thermal effect. The human body needs to maintain internal temperatures within certain ranges that cannot vary by more than just a few degrees.

Ham radio operators are warned about this, so clearly a device transmitting on these frequencies would cause serious damage if they exceed certain safety limits.

The military could use this to target enemy troops and also specific targets where there are others around them, based on the fact that these resonant frequencies are unique.

However, it's not just the military that would use this. The essence of this technology is very basic and others have also been using it. All they essentially need is a transmitter and serious damage could be caused.

The fact that research has also shown that it's not just thermal effects that can cause damage means that the power levels of these signals do not need to be that strong.

The mind works on electricity, it's obvious that creating or affecting neurological currents could cause various biological effects.

You are a receiver of radio wave energy. Just like an antenna signals are causing electromagnetic forces in your mind at this very moment.

You're also essentially a transmitter because those same signals and the electromagnetic fields that they create generates a reradiated radio wave of the same frequency.

Looking at the radio spectrum there are signals everywhere. Someone is likely broadcasting on your resonant frequency range at this very moment, causing you to receive and transmit radio waves. Because these signals generate or affect biological electrical currents they're probably having some effect, whether noticeable or not.

It's been shown here how to detect these signals.

Those radio waves that you're transmitting could also contain EEG data and be received from further away, so that someone could remotely monitor your mind's electrical activity with bio radars. Cazzamalli’s research on this effect originated in the 1920's, with his work later classified by Mussolini.

This originates then from around the 1920's, think about who would be using it now.

Serious violations have occurred using this technology, lives have been ruined, there are going to be consequences.

What's occurred in Cuba, China and elsewhere from around 2016, with the diplomats experiencing symptoms likely caused by this technology, is also revealing this.

These signals can be transmitted using mostly standard laboratory equipment.

These signals cause you to both receive and transmit, through reradiation, electromagnetic energy and could be used for intentionally causing Havana Syndrome symptoms or also used for surveillance with or without resulting side effects.

Such resonant frequency ranges would also likely cause electrosensitivity.

The results of this research then has achieved the objective of proving a mechanism for how such electromagnetic energy is received that would cause Havana Syndrome symptoms or electromagnetic radio and microwave harassment and also electrosensitivity.

In detecting the reradiated frequency ranges that could be used for such EEG surveillance (RNM), it was found that signals at the same frequency ranges could also be used to cause biological effects. This is because the received signal generates oscillating electromagnetic fields in us, which then creates the reradiated RNM signal, with the received electromagnetic energy affecting neurological signaling and causing the various symptoms of Havana Syndrome.

This work then has proven that signals at certain frequencies can be received and reradiated and that this is a way of biologically affecting someone and the reradiated signals could be used for bio radar signals from breathing and heart rates and also EEG surveillance (RNM).

It’s required that the radio spectrum used for these signals is secured, preventing their use.

5. Conclusion

This research has proven a mechanism for the causing of Havana Syndrome.

That is, signals can be transmitted at specific frequencies that are unique for each of us. These are our resonant frequencies. Just like an antenna tuned to a specific frequency, they create electromagnetic fields in us that affect neurological electrical currents and signaling, with resulting biological effects.

The electromagnetic fields are reradiated, with their strength and phase modulated according to EEG activity, creating a reradiated radio wave of the same frequency that can then be used for remote neural monitoring (RNM).

This causes us to be a receiver and transmitter of radio waves and, thus, is a mechanism for the causing of Havana Syndrome symptoms and electromagnetic radio and microwave harassment.

Acknowledgments

There are those that have created certain events that have facilitated this.

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