

REPORT

EPLESPY TREATMENT WATCH



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INTRODUCTION :

Electrical oscillations, which we call brain waves, have captured the attention of scientists and the general public for more than a century. But its function—and even whether it has a function beyond simply expressing brain activity such as motor hums—is still a matter of debate. Many neuroscientists hypothesize that if brain waves are doing anything, it is by oscillating simultaneously in different locations. However, a growing body of research indicates that many brain waves are in fact "mobile waves" that move physically through the brain, as waves do in the sea.

Brain wave ratings:

Gamma waves:

Frequency: 32 - 100 Hz.

Status: Increased cognition, learning, and problem-solving tasks.

Gamma brain waves, the fastest measurable EEG-electroencephalogram, have been linked to heightened perception or peak mental states when there is simultaneous processing of information from different parts of the brain.

It has also been observed that brain waves are often much stronger and more regular in long-term meditators such as Buddhist Monks.

Beta waves:

Frequency: 13-32 Hz.

Status: Alert Alert, Normal Alert Consciousness, Active Thinking

Beta brain waves work most when we're in an active conversation, when making decisions, or when focusing on a new task.

Alpha waves:

Frequency: 8-13 Hz

Status: Physical and mental relaxation.

Alpha brain waves are one of the simplest waves to notice (the first thing that was discovered from brain waves), as we can notice them when our eyes are closed, or when the mind is in a state of relaxation, and that is during certain activities such as yoga, before bed, or when The mind is in a state of creativity and innovation.

Theta waves:

Frequency: 4-8 Hz

Status: creativity, insight, intelligence, dreams, low perception.

Theta brain waves indicate the deep relaxation that occurs during meditation, and can be detected during dreaming or deep meditation as well as daydreaming.

Theta brain waves also increase, when we perform automatic tasks that the mind may be disconnected - to some extent - when we do

them, such as brushing teeth or taking a shower, and research has shown a positive association with theta waves and between memory, creativity and psychological well-being.

Delta waves:

Frequency: 0.5-4Hz

Status: sleeping, dreaming

Delta brain waves are one of the slowest brain waves.

Which occurs when we are in a deep sleep or in a state of dreamless sleep,

It also helps in rejuvenation and recovery, in addition to being an important and necessary reason to get enough sleep.

After all, we are body, mind, and spirit, and each speaks a different language: the body is frequency, the conscious mind is words, and the subconscious mind or soul is images.

I began looking for the perfect frequency for healing the body, the perfect words for healing the mind, and the perfect images for unconscious and subconscious healing.

The human mind is wonderful. There are many things we do not know! However, we know that we can stimulate our brain waves and, as a consequence, our physical and mental well-being.

Epilepsy: is a group of neurological disorders that result from disruption of electrical signals in brain cells and characterized by recurrent seizures. Epileptic fits can vary from short, nearly undetectable to long periods of severe convulsion, and these seizures can also lead to physical injury, including sometimes broken bones. Seizures recur in epilepsy and, as a rule, have no immediate underlying cause. Separate seizures provoked by specific causes such as intoxication are not considered epilepsy. People with epilepsy can be treated in many different forms in many regions around the world and suffer from varying degrees of social stigma because of their condition.

My innovation performs two functions:

1- Diagnosis of epilepsy by electroencephalography (EEG) using the medical watch.

2- Treatment of epilepsy through the medical watch by wireless electrical stimulation of the brain.

First, electroencephalography using a medical watch to diagnose epilepsy:

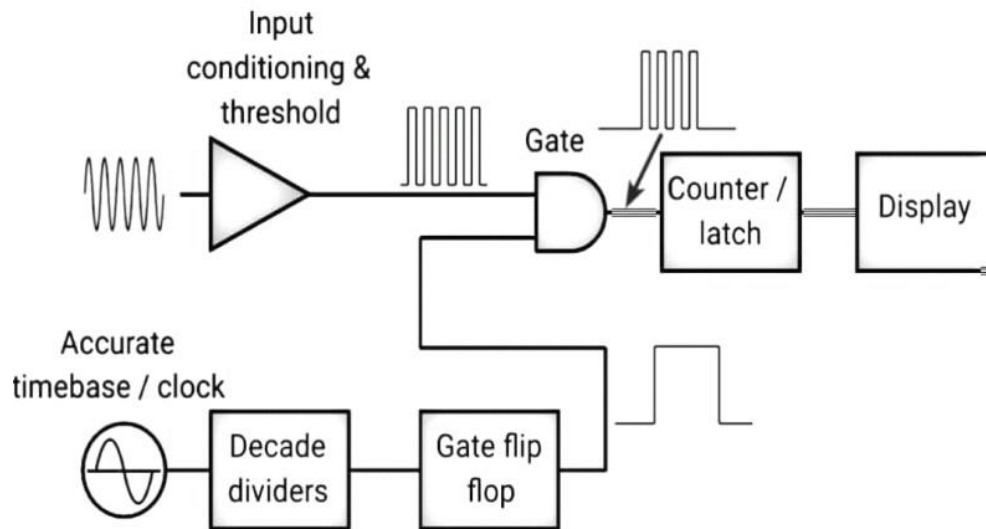
EEG is widely used to diagnose epilepsy, which causes abnormal patterns in EEG reading. This mechanism is also used to diagnose sleep disorders, coma, encephalopathy, and brain death. EEG was previously used as a primary diagnostic method for tumors, strokes, and other focal brain disorders.



How does an epilepsy diagnostic device work:

First, the device captures the electrical signal resulting from the movement neurons through an electrical circuit designed from pairs of electrodes that measures the voltage difference of the neuron, and then this signal is amplified because it is very weak and is purified by a filter to remove distortions from the rest of the unwanted signals, and then also invoked body temperature and heart rate to make sure that it is a case of epilepsy in a large proportion, and the last algorithm we use is changes in blood flow in the hand (FMRI). All of these algorithms give highly accurate results in the event of epilepsy or not, and here will be my work in the master's program in developing and testing those algorithms To detect epilepsy.

Circuit diagram for measuring frequencies that contain epilepsy:



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Second: Wireless electrical stimulation of the brain to treat epilepsy using a medical watch:

Electrical brain stimulation, also referred to as focal brain stimulation, is a type of electrotherapy that is used in scientific research and clinical neurology to stimulate a nerve or neural network in the brain by direct or indirect excitation of the cell membrane using an electric current. This technique is used in scientific research or treatment.

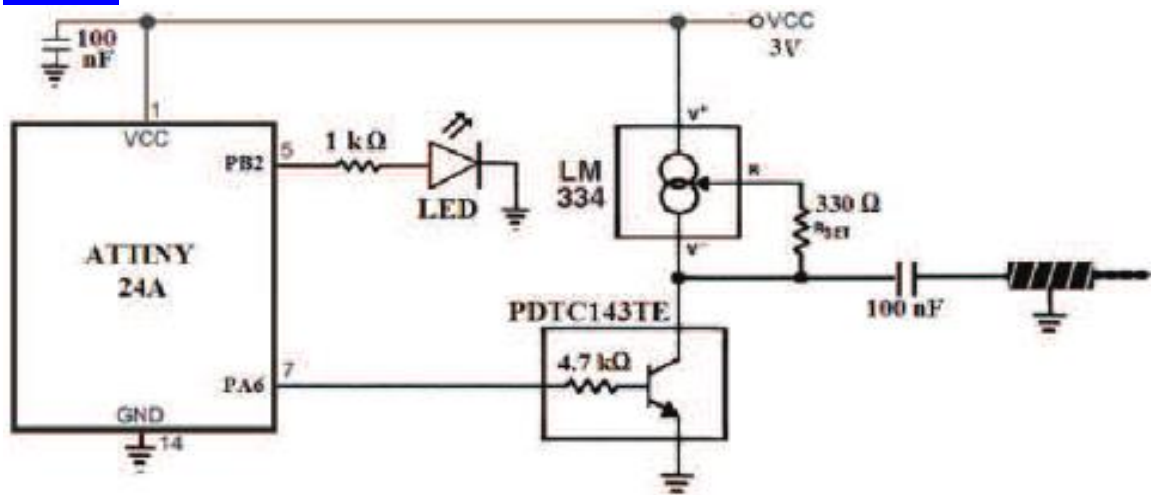


How does the wireless electrical brain stimulator work in the medical watch I designed:

First, the device sends periodic electrical energy to the brain through sensory neurons, which in turn delivers electrical energy between them to the spinal cord, which transmits the electrical signal through spinal transmitters to the brain, and then the electrical signal stabilizes in the place in the brain, after which the electricity is transmitted from the area The highest effort, that is, the brain cells, to the area of least effort, which is the differentiation circuit in the watch.

My work in the master's program is to build a circuit capable of sending this electrical energy to the brain through neurons and spinal cord, developing this circuit and testing the results.

Scheme of the circuit that sends electrical energy to the brain through neurons and spinal cord:



This is the shape of the device that I designed, as it consists of the part that diagnoses epilepsy through electroencephalography and the other part that stimulates the brain electrically to treat epilepsy. The treatment is not final, but only relieves the disease for the affected person.

