FINAL YEAR PROJECT REPORT

MOOD CHANGER USING MAGNETIC FIELD

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Abstract

The human brain exhibits electrical activity in the form of tiny alternating currents. Using extremely sensitive equipment it is possible to monitor these currents from voltages present at the skin surface of the head and it has been established that different frequencies correspond to some extent with the subject's mood or mental state.

An alternating magnetic field induces electrical currents in conductive material within range and brain tissue is such a conductor. So we have made a device called "Mood Changer" which generates magnetic field of some specific frequencies in order to change the brain states.

The idea is quite simple. Firstly, there is a frequency generator in it which uses PIC microcontroller to generate digital sine wave at four different frequencies. Then, the wave is become smooth and amplifies and finally magnetic field generates.
This magnetic field, according to above phenomenon, changes the mental states.

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Chapter I.Introduction

1 Introduction

This project mainly uses magnetic field in order to alter the mental state of a brain. Though, there are four main frequencies we have included in, this project mainly focused on the patient of insomnia.

Insomnia: Insomnia (or sleeplessness) is most often defined by an individual's report of sleeping difficulties.

These patients can have a great benefit by using this device and can reduce their difficulties about sleeplessness.

There are three parts of this Mood Changer device.

1. Digital Sine Wave Generator.
2. Power Amplifier.
3. Inductive Loop.

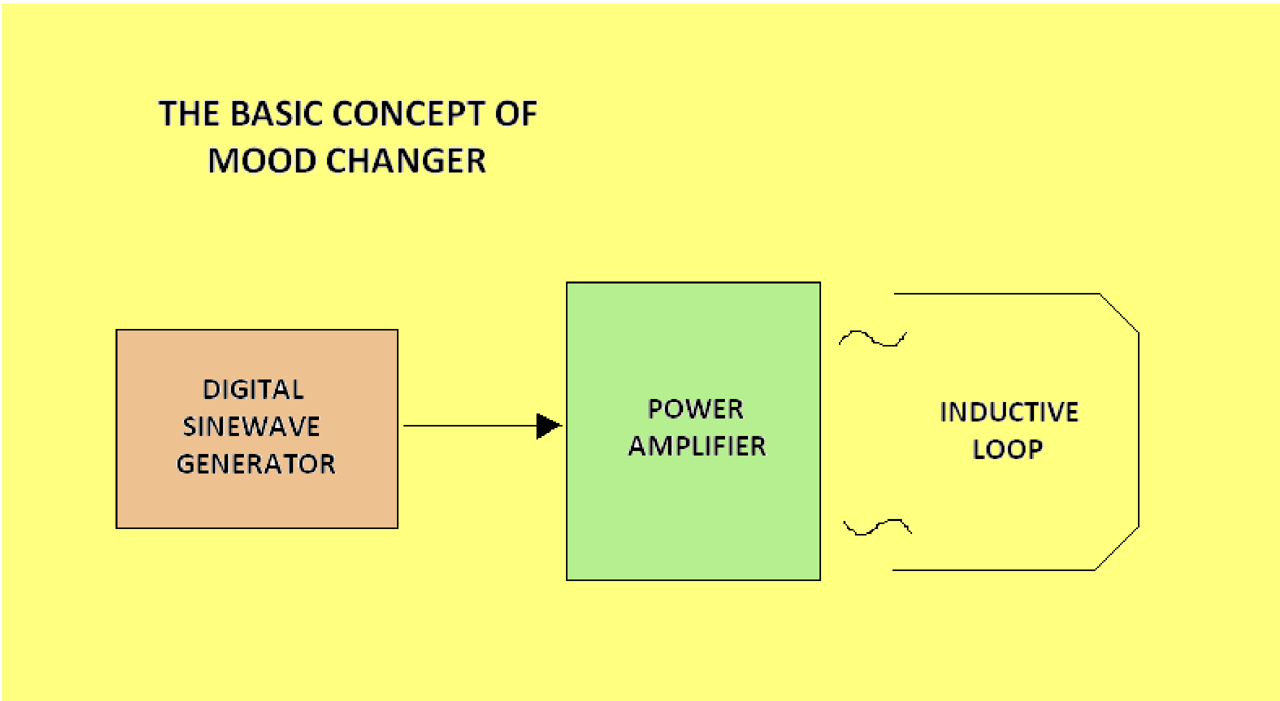

Figure 1. Block Diagram of "Mood Changer" Device.

The digital sine wave produced using PIC microcontroller and then it is smoothed and amplified. Finally it is generated in the form of magnetic field using inductive loop.

The sine wave can be of four types of frequencies which are associated with four different mental states.

Frequencies Overview:

Of the frequencies established to date, the most important from our point of view fall into four broad categories which have been named by researchers. The lowest band is called ***Delta*** and covers the range from 0·5Hz to about 4Hz, and is found during deep sleep and in very young babies. The second is ***Theta***, which ranges from 5Hz to 7Hz and is associated with mental imagery or mental picturing.

The next frequency band on the scale runs from 8Hz to about 12Hz and is known as ***Alpha***. This is the range that first came to the attention of people outside the medical profession when it was observed in Zen practitioners during a session of deep meditation.

This led to the notion that learning to generate high levels of Alpha activity might allow access to these deep meditative states without the years of rigorous training normally required. Needless to say this proved less than strictly true but many experimenters would agree that it is at least a step in the right direction and mediators sometimes refer to the “Alpha’’ state, which usually implies deep relaxation. The highest brainwave frequencies commonly found are between 18Hz and 30Hz, and are called ***Beta*** waves. They appear during the normal alert, wakeful state.

Other brainwave frequencies exist but are not as well defined and are rarely encountered outside medical EEG research.

Force Field:

Various ways of encouraging the brain to generate specific electrical frequencies exist, one of which is exposure to a suitable alternating magnetic field. Opinions on how this works vary but one likely method seems quite simple. An alternating magnetic field induces electrical currents in conductive material within range and brain tissue is such a conductor. It seems likely that the production of weak currents of suitable frequency within the brain will either tend to produce the desired mental state directly, or it may do so by encouraging the brain to “synchronize’’ to the frequency.

This produces tiny localized magnetic fields. This new project represents an attempt to increase the effect by delivering a much larger current into an inductive loop system which may be placed right around a small room (or around a bed in the case of insomnia!) to permeate a whole area with the desired field. Roughly speaking, it can saturate an area of up to four meters square with a sufficient field of intensity. This should be sufficient for the most ardent enthusiast of the system.

How It Works:

The circuit consists of a low-frequency sinewave generator followed by a power amplifier designed for optimum performance at frequencies right down to d.c., see Fig.1. Low-frequency sinewaves are most easily produced using digital synthesis techniques, for which the PIC16F84 microcontroller is well suited.
A bunch of resistors with suitable values are connected to the eight outputs of Port B of the PIC, which are turned on and off in sequence at suitable intervals to give the desired frequency. The resulting output waveform is “stepped’’, but adequately sinusoidal when viewed on an oscilloscope, certainly sufficiently so for this project.