

AN EXPERIMENTAL APPROACH OF WIRELESS POLLUTION CONTROL

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ABSTRACT

Modern life put us in contact with a large number of poisons and pollutants. There is noise pollution, air pollution, chemical pollution and many others. One of them, however, is totally invisible and undetectable to humans: that is electromagnetic pollution. There are many different types of electromagnetic waves. The most familiar to us is light but other members of this class are: radio waves, microwaves, ultraviolet light (UV), gamma radiation, infrared and others. Mobile phones use the microwave and radio wave regions of the spectrum. The heating effect of microwaves is well known (microwave ovens) and it has been proved experimentally that the microwave power emitted by a typical handset can heat up water to a small extent (different handsets emit different levels of power, and that information should be available to customers). It is not a very pronounced effect. Since this paper gives an novel idea of controlling the pollutions of the microwave and converting them into electricity which is given to hand tree in purification of CO₂, the measurement of microwaves get detected and if it exceeds the level which will be harmful then they get absorbed. Sensors which helps in passing signals to turn on the absorber. The model gets placed at the peak place where automobiles are congested for a long time.

KEYWORDS: Microwave Absorber, Sensors, CO₂ Purifier, Rectenna, Hand Tree

INTRODUCTION

In the last decade's cell phones usage have altered the land scale of modern human beings in countless ways, in office, at home and on mobility. However, created the environmental electronic pollution due to electromagnetic fields. In spite of the recent studies indicating possible harmful impact of EMF pollution on several species, there is no long term data available on the environmental impacts of EMF pollution and how much power density is radiated in the environment due to cell phones. The aim of this research work is to control the electronic radiations and from the radiation purification of CO₂ process get carried on. Current world environment is increasingly getting polluted with a new entrant called Electronic pollution which is invisible. Extraordinary developments in various fields of science and technology in last few decades have increased the human involvement deeply into the natural environment, its related ecological, biological and physical systems resulting in various undesirable and unintentional negative impacts on human health and environment. Rapid development and usage of electronic products in all walks of life, electronic pollution into environment has become a great concern to entire world community. In this electro-magnetic pollution has assumed prominent importance which is in limelight in recent times for all negative reasons. The intensity of manmade electromagnetic radiation has become so ubiquitous and it is now increasingly recognized as a form of invisible and insidious environmental pollution which is affecting environment and human health alike in different ways^[2].

Electromagnetic radiations are not easily recognized and detectable, However their impacts are being felt on human health hazards such as blood barrier resulting in neuronal damage, risk to children/pregnant women, DNA damage, skin problems, ringxiety including ear damage, cause for tumors in the eye, sleep disorders, headaches, increase in cancer

causes which have been attributed by World health Organization (WHO) and other researchers. WHO has conducted study in 13 countries has reported 5117 brain tumor cases [2] – [4]. Professor Girish Kumar of IIT, Bombay has in his research quoted saying there are 200 research papers contributing to effects of EMF radiation to human health problems [5] and [6]. The impact of EMF radiation on environment further escalates on forests, birds, bees and wildlife [5] and [7]. The cello phone operators association and government of India reject these allegations due to lack of evidence

Every year, hundreds of thousands of new cell phones are introduced into market. Mobile telecom revolution in the modern world has triggered not only the growth of world economy but has changed the life style of millions of people. Mobile telephony is growing exponentially in India and across the world. At present there are about 800 million mobile subscribers in India and over 4.03 billion in the world. Due this exponential growth of population, urbanization, consumer electronics products concern for environment and human health hazards is growing throughout the world. There is a great need to know what are the current EMF emissions into environment and for 2030 by cell phones. Hence, measurement and estimation of waves get utilized for the purpose of clean environment by this project.

Table 1: EMF Radiation Projection for of Cell Phones at 1800 MHZ

Country	2013 Rad Power Density (Million w/m ²)			2020 Rad Power Density (Million w/m ²)			2030 Rad Power Density (Million w/m ²)		
	ON	Rx	Tx	ON	Rx	Tx	ON	Rx	Tx
India	72.64	2903	3045	79.56	3180	3335	116.8	4669	4896
China	83.68	3345	3508	84.74	3427	3594	116.3	4649	4876
USA	25.28	1010	1059	27.04	1080	1133	29.20	1167	1224
World	480.0	19188	20124	549.8	21979	23052	612.5	24484	25678

RELATED WORK

Thus, the object of the present invention is to develop an Anti-Radiation Chip for use on microwave radiation emitting devices selected from the group comprising mobile phones, personal computers (laptops and desktops) and Central Processing Units (CPU's). Another object of the present invention is also to develop an Anti-Radiation Strip for use at installations outfitted with microwave radiation emitting devices such as Public Transmission Towers. An instrument known as the 'Lecher Antenna' has been used for determining whether our chips and strips resonate with the human body and are effective. The Lecher Antenna is a mechanical instrument which measures wavelengths of up to 20 cms or divisible. It works on the principle of resonance [4]. This instrument is being used extensively for geopathic and health tests in many parts of USA and Europe and is made by manufacturers in France and Germany. Tests performed using the lecher antenna show that the Chip and the Strip do not adversely affect the strength of the signal and hence, Our products have also been tested in a lab in Cambridge, U.K., to prove that by fixing them on a particular device; it does not interfere with the signal strength and intensity of the Electromagnetic Field (EMF). Therefore there is no loss of data (voice, text, etc) while using a mobile phone, computer, etc.



Figure 1, 2: Anti Radiation Chip & Model

EMF Radiation Projections for India

In 2013 when India is asleep and all cell phones are in on(sleep) mode, India emits invisible EMF power density of 72.64 and 19.34 million watts per square meter at 1800 MHz and in 300 MHz-50 GHz frequency band into environment respectively [8]. By 2020 these figures would be 79.56 & 21.18 million watts per square and by 2030 these figures will increase to 116.8 & 31.09 at the above stated frequencies. The radiated power densities when all cell phones of India are in receiving and transmitting modes are also shown in table 1 and 2 at stated frequencies for 2013, 2020 and 2030 respectively.

The cell phones radiated power densities in on, receive and transmit modes by India at 1800 MHz and in 300 MHz-50 GHz band are shown in bar charts in figures 3 and 4 for 2013, 2020 and 2030 respectively. Assuming that 50% of cell phones of India are transmitting and 50% are receiving which is most realistic, in 2013 India will contribute 2975 and 3924 million watts per square meter at 1800 MHz and in 300 MHz- 50 GHz band respectively. These quantities will increase to 3275.5 and 4782.5 in 2020 and 2030 respectively at 1800 MHz's. India lowered its radiation emission limits for mobile phone towers to 450 mill watts/sq m from 4,500, but as per the report, the levels are still too high. At least five new studies have detected biological effects when radiation level touches between 0.03 and 0.5 mill watts/sq m, the report states.

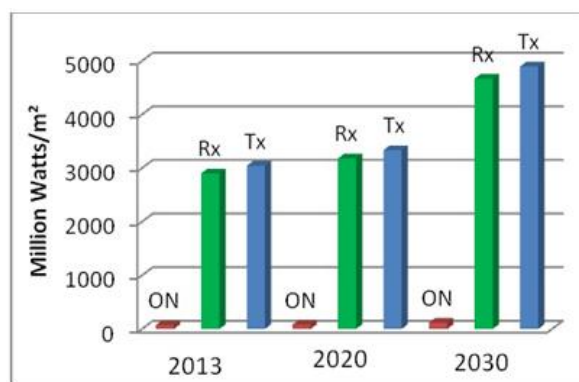


Figure 3: Cell Phone EMF Radiation Pollution Projections for India at 1800MHz

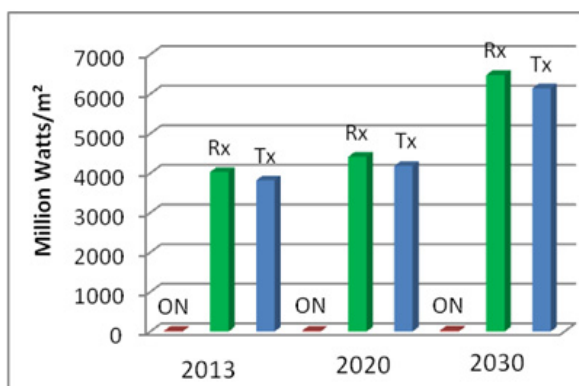
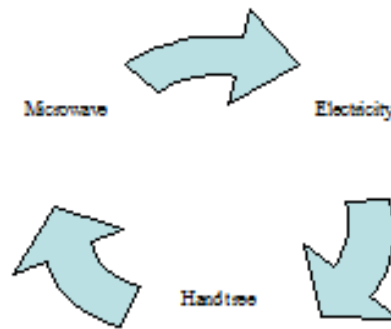


Figure 4: Cell Phone EMF Radiation Pollution Projections for India at 300MHz – 50GHz

DESIGN OVER VIEW

The microwave affects the human cells when it crosses over a particular range. at that time the microwave detector analyze the range and if exceeds the range then a signal is transmitted to the absorber to activate. If the absorber gets activated then the microwaves get absorbed and they get used in production of oxygen from the hand tree. Since hand tree needs a small amount of energy to operate. The diagram gives a basic design of the paper.



Acoustimeter

The Acoustimeter is a user-friendly accurate RF measurement instrument which provides both LED lights and LCD text display of peak and average levels of radio frequency and microwave frequency electromagnetic fields, covering the spectrum from 200 MHz (digital TV and radio) all the way up to and beyond the latest 5.6 GHz Wi-Fi and WiMax frequencies to over 8 GHz. It has a digital readout which is sensitive to 0.02 V/m and a sound output enabling you to hear the actual sound of the signal modulation. These features make the instrument the most useful one available to even those with severe electro sensitivity [5]. The readings are shown on both an LCD display and two series of graduated LED lights. The LEDs update rapidly, and allow you to quickly gauge the levels in an area and find any hot-spots. The LCD display offers high accuracy with a lower update/refresh speed, giving you time to note the readings. There is a speaker and an audio output socket for headphones or for a feed to an audio recorder, allowing you to determine, with a small amount of practice, what type of source is emitting the levels that are present..



Figure 5: Narda 8511

A two-line LCD displays actual levels indicated by the LEDs including Peak exposure levels in V/m and Average exposure levels in $\mu\text{W}/\text{m}^2$. The Narda 8511 is intended primarily for industrial applications and is very easy to operate. This measuring device has fixed, isotropic probes and can measure E and H fields without changing probes.

Features

- Complete Measurement System (Meter with dual sensor probe which measures Electric and Magnetic Fields independent)
- Extremely easy to use
- High overload Tolerance
- RMS Detection
- Isotropic Probes
- Auto Zero

Specifications

Table 2

Frequency range	300 kHz to 100 MHz
Band coverage	0.3 - 1.0 MHz, 1.0 - 20 MHz
	20 - 80 MHz, 80 - 100 MHz
Measurement range	0.1 bis 100 mW/cm ² E field
	0.2 bis 200 mW/cm ² H field
Special feature(s)	Zero alignment at a key press
Display units	mW/cm ² , W/m ² , V/m, A/m

RF-MICROWAVE RADIATION MEASUREMENT

Rectenna

A **rectenna** is a **rectifying antenna**, a special type of antenna that is used to convert microwave energy into direct current electricity. They are used in wireless power transmission systems that transmit power by radio waves. A simple rectenna element consists of a dipole antenna with an RF diode connected across the dipole elements. The diode rectifies the AC current induced in the antenna by the microwaves, to produce DC power, which powers a load connected across the diode. Schottky diodes are usually used because they have the lowest voltage drop and highest speed and therefore have the lowest power losses due to conduction and switching. Large rectennas consist of an array of many such dipole elements.

The rectenna was invented in 1964 and patented in 1969 by US electrical engineer William C. Brown, who demonstrated it with a model helicopter powered by microwaves transmitted from the ground, received by an attached rectenna.^[2] Since the 1970s, one of the major motivations for rectenna research has been to develop a receiving antenna for proposed solar power satellites, which would harvest energy from sunlight in space with solar cells and beam it down to Earth as microwaves to huge rectenna arrays.^[3] A proposed military application is to power drone reconnaissance aircraft with microwaves beamed from the ground, allowing them to stay aloft for long periods. In recent years interest has turned to using rectennas as power sources for small wireless microelectronic devices. The largest current use of rectennas is in RFID tags, proximity cards and contactless smart cards, which contain an integrated circuit (IC) which is powered by a small rectenna element. When the device is brought near an electronic reader unit, radio waves from the reader are received by the rectenna, powering up the IC, which transmits its data back to the reader.

Radio Frequency Rectennas

The simplest crystal radio receiver, employing an antenna and a demodulating diode (rectifier), is actually a rectenna - although it discards the DC component before sending the signal to the earphones. People living near strong radio transmitters would occasionally discover that with a long receiving antenna, they could get enough electric power to light a light bulb. However this example uses only one antenna having a limited capture area. A Rectenna uses multiple antennas spread over a wide area to capture more energy. Researchers are experimenting the use of rectennae to power sensors in remote areas.

Hand Tree

The growth of cities and the rapid development of industry pollute our planet and the atmosphere around it. The population has a lot of problems with breathing. So there is a necessary for making a personal advice enough light and small sized for cleaning the air. Working at a principle of plants it takes the dirty air and returns purified one creating its own atmosphere around a person filling it with perfume fragrance of anyone's choice. Combining millions of personal air

purifiers we can achieve the image of living in a forest. If every inhabitant in a big city would wear such a device, we would be all to breathe easily in a smoggy air. The material of which the product made is specified by the type of the accessory and may be represented in a series of bracelets, pendants, belts and etc.



Figure 6: Hand Tree

The bangle «Hand-Tree» from gadget series «Tree» is a solution of ecologic problem with the air cleaning. It is working as photosynthesis in plants takes contaminated air and gives back clean air. The bangle has two type of work: [4] Global and Local. With Local it hard creates zone of clear air around the user which helps to look after health. With Global it cleans air and safe power contributing to the purification of the planet's atmosphere. «Hand-Tree» has also two modes of operation: Automatic and Manual. With Automatic mode it independently monitors environment, and changes the work types, depending on dust environment. Using Manual mode the user has control over the types of work. The kit comes with gadget charger. Battery is charged wirelessly using the technology of Qi. Strong laminated body done from eco plastic Biograde and meets heath standards. It is able to withstand the stresses typical to this type of accessory. A lining of the strap done from leather-cloth. According to concept of Electrolux the logo of series is slightly amended and symbolizes the symbiosis of technology and nature.

Changing logo color on the touch pad indicates the condition of the filter. Changing color of body lighting indicates the level of pollution. The charge state of the battery is displayed on the screen and the menu. The filter and the battery are under the front panel. Change of types of work, operation and configuration of the bangle is carried out via the menu bar with the help of touch screen. The menu consists of three steps: selecting and activating Local type, selecting and activating Global type and installation-specific settings of the bangle. Hand-Tree doesn't have clasps and puts on hand thanks to high quality tSIL-10 silicone rubber between gadget body and bracelet. This type of rubber can be exceed the original size in many times without risk of tearing, subsequently obtains the original shape without distortion [2].



Figure 7: Working of Hand Tree

RESULTS

The efficiency of purification depends on the number of hand tree used in the project it may be varied according to the microwave radiation. So that the detector has to be properly located. Since the purification is a complex process the efficiency get varied with respect to the wave absorbing efficiency. Thus the tree needs very low power to operate. The positioning of the tree matters a lot in this project. It is prefer to keep the module in the traffic stations so that the CO_2 get purified in huge number. Since low power needed for hand tree so that the battery is of long life.

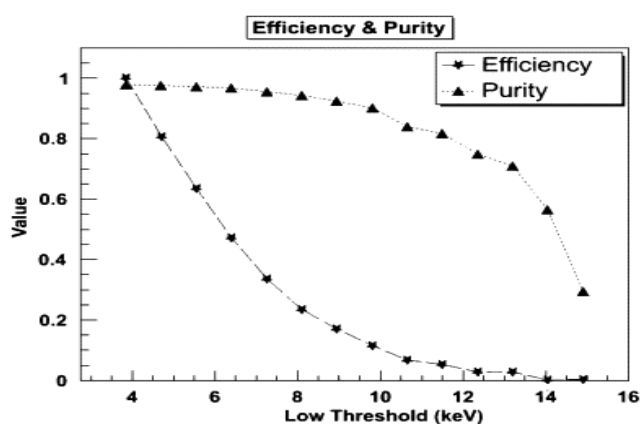


Figure 8: Efficiency vs. Purity of CO_2

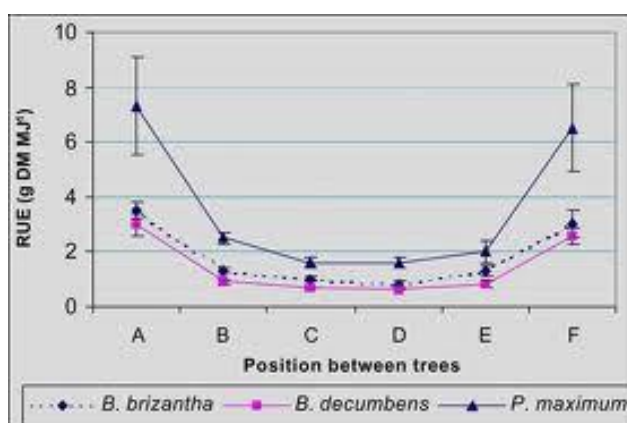


Figure 9: Positioning of Hand Tree

CONCLUSIONS

The results obtained in the study indicate that electro-Magnetic waves emitted from mobile phones operating at 1800 MHz affect the human. Today, the human energy system is under severe frontal attack from a wide range of unnatural EMF and artificial energy radiation produced by broadcasting stations, power lines, cell phones, microwave transmission towers, military installations, and other conventional technology, and the damage this has done, and continues to do, to human health throughout the world is incalculable. By the radiation the mobile phones the purification of the CO_2 is one of the new approach and it helps in cleaning of the environment. Since it is a first step over the control of wireless pollution matters. There are many methods to purify the CO_2 but hand tree has its own contribution. It is portable. Less power needed. So it get used in this model.

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