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A FRAMEWROK FOR WIRELESS COMPUTER MONITOR USING OPTICAL APPROACH

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ABSTRACT: To make a Wireless Communication of date form CPU to Monitor. Without hesitation of wires and complexity of connection is less. Helping for in Education institute take a facility to lecture in one class and these lecture is broadcast to other class room. Webcam taking image and these image transfer to CPU and then transfer to wireless monitor for display and take a facility for seen another class room which is helpful for one Processor to many Monitor network connection without wires

Keywords: WCM, VGA Cable, Photo Darlington, LDR, LASER, etc.

I. INTRODUCTION

Setting up of a wireless connection between the CPU and the Monitor (screen).For designing purpose first Section study and understanding the computer Second section See the Challenged involved for setting connection between CPU and monitor Third section discuss Proposed method for CPU to Computer monitor. Section four discusses the future work for WCM.

Feasible for the CPU to computer monitor be kept far away from the rest of the components of the computer. Of course it is possible proposed method is discussed in this paper. WCM is available costing $750 in the US, feasible in a much lesser cost.

II. RELATED WORKS OF WIRELESS COMPUTER MONITOR

Objective is setting up of a wireless connection between the CPU and the Monitor (screen). Computer monitor to CPU cable called Analog (VGA) because most monitors require the signal information in **analog** (continuous electrical signals or waves) form and not **digital** (pulses equivalent to the binary digits 0 and 1), they typically use an analog connection. Display information is in analog form, it is sent to the monitor through a **VGA cable**. The cable connects at the back of the computer to an analog connector (also known as a D-Sub connector) that has 15 pins in three rows

Fig 1. VGA cable (Source Howstuffworks)

VGA connector like this has three separate lines for the red, green and blue color signals, and two lines for horizontal and vertical sync signals. In a normal television, all of these signals are combined into a single composite video signal

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1: **Red out**	**6**: Red return (ground)	**11**: Monitor ID 0 in
2: Green out	**7**: Green return (ground)	**12**: Monitor ID 1 in or data from display
3: **Blue out**	**8**: Blue return (ground)	**13**: **Horizontal Sync**
4: Unused	**9**: Unused	**14**: **Vertical Sync**
5: Ground	**10**: Sync return (ground)	**15**: Monitor ID 3 in or data clock

Fig 2. VGA Pins table

III. CHALLENGES INVOLVED

Challenging at the outset due to the heavy bandwidth consideration. i.e. 1024 (rows) *768(columns) *60 (refreshes per second) *32 (bit per pixel) = 184320 Kilo Bytes per Second = 180 Megabytes per second.

It is important that we maintain the great signal quality and the resolution, because the small distance between the eye and the monitor. This whopping amount of bandwidth may not be very easy to avail.

Now the available options for wireless communication between CPU and Monitor there are three proposed method for feasibility in this work.

A. IR transmission.
B. FM/ AM transmission.
C. Transmission though Optical medium.

A. IR TRANSMISSION/ DETECTION METHOD FOR WCM

Possible circuit uses of IR transmission use intensity modulation of an Infrared LED in the transmitter along with an Infrared-sensitive photo resistor as a detector

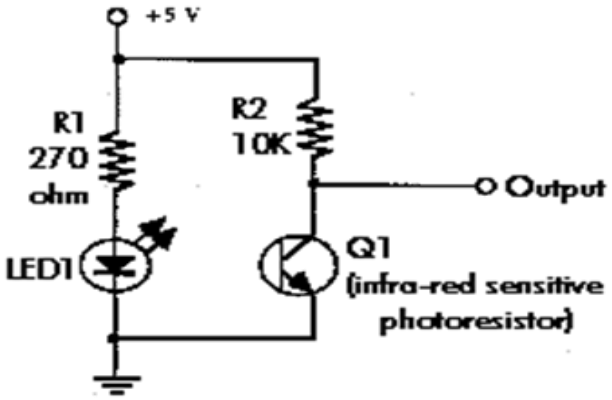

Fig 3. Basic Circuit for IR transmission

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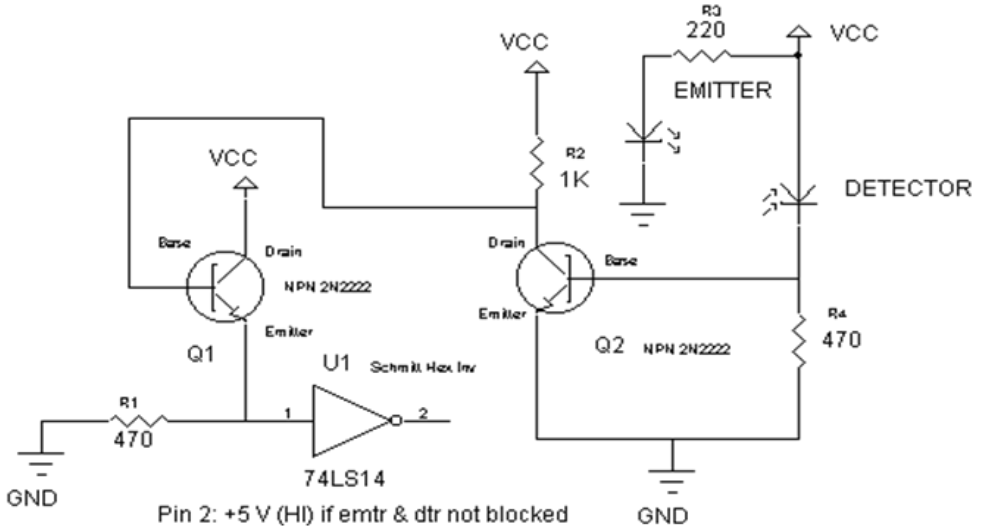

Fig 4. Possible circuit for IR transmission

IR Transmission would not be feasible due to the high bandwidth/ data-rate requirement, further they are limited in distance, due to divergent nature of the beam .

B. FM TRANSMISSION METHOD FOR WCM

In FM Transmission method uses a FM Transmission Circuit after PSpice coding of the FM transmission we see that output is not periodic, when the input is a periodic pulse and hence the demodulator or receiver circuit becomes too complicated.

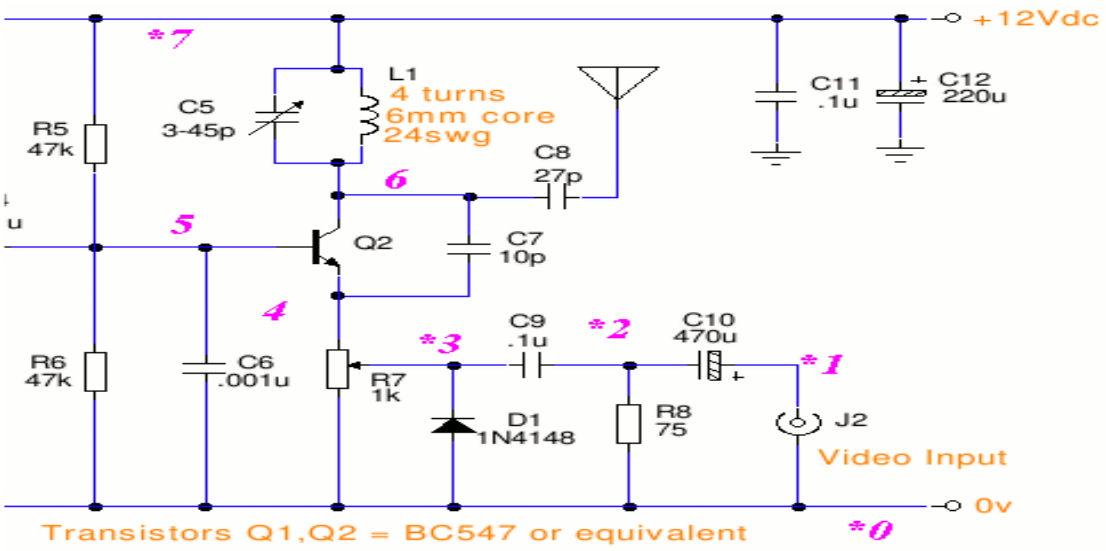

Fig 5. FM Transmission Circuit

Further for FM, the bandwidth available is not broad so, we had to abandon this idea as well as the idea of AM transmission, due to the above reasons

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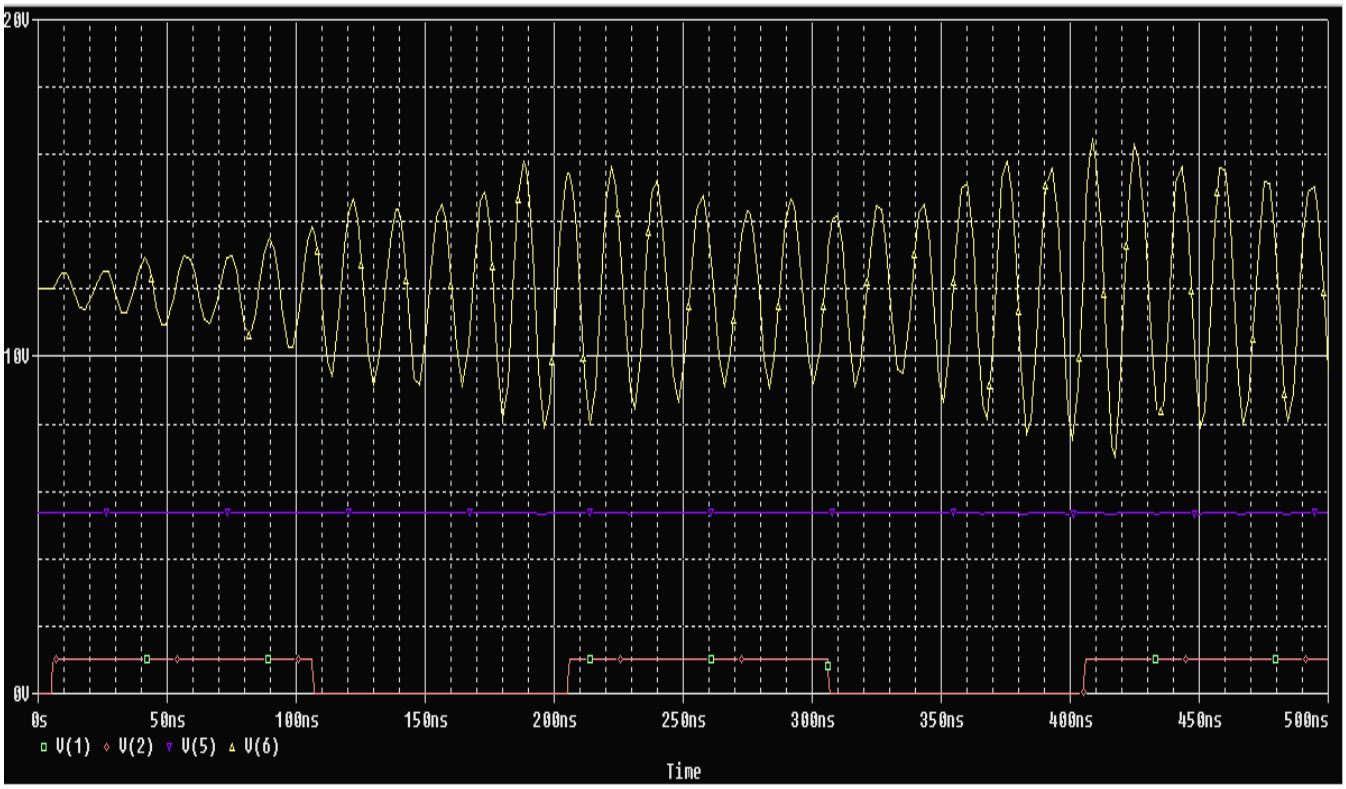

Fig 6. Orcad Spice Output for FM Transmission

C. *TRANSMISSION* THOUGH OPTICAL MEDIUM

Goal is to transmit 5 signals;-

1. Red
2. Green
3. Blue
4. Horizontal Sync. (≈ 67 KHz)
5. Vertical Sync. (≈ 67 Hz.)

Now the Sync (Synchronization signals), methods used for multiple access for transmitting the various (5 required signals), in the optical communication domain uses a Spatial Division Multiple Access in this multiple access is a satellite communications mode that optimizes the use of radio spectrum and minimizes system cost by taking advantage of the directional properties of dish antennas These antennas are highly directional, allowing duplicate frequencies to be used for multiple surface zones

SDMA is most convenient to implement, if we use laser torch, where light does not diverge to any appreciable extent. So we use a combination of LASER torch with an IR transmitter. Now we build a optical transmitter circuit and receiver circuit for Wireless computer monitor.

In the Transmitter side we use a tunable amplifier, to give variable voltage, which would in turn modulate the intensity of the light source (LASER, LED etc.)

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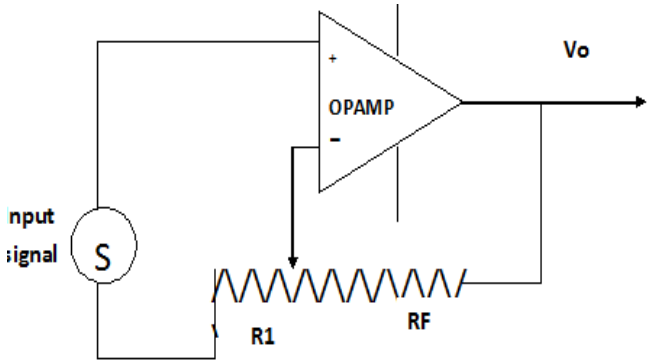

Fig 7. Proposed Tunable Ampifier

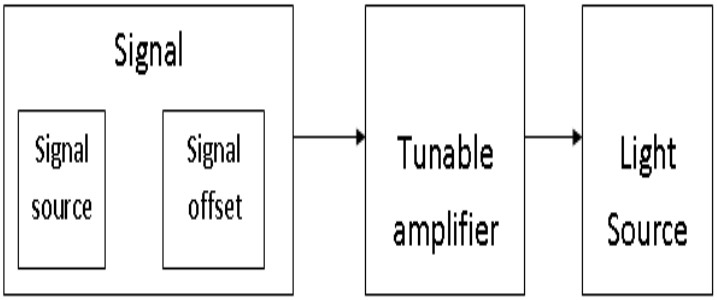

Fig 8. Transmitter Diagram

IV. OPTICAL RECEIVER CIRCUIT

In the Receiver side we use optical Receiver optical receiver consists of Photo Darlington (2N5777). It is an optical transducer which converts optical signal into electrical signal, when light is incident on photo Darlington it starts working i.e. the photo current flow in photo diode. There is very small current flow which is in mA, due to this small current a voltage is generated by the second transistor. After amplifying the voltage by use of a Darlington amplifier stage, we use low noise Operational Amplifier which amplifies the output voltage generated by transistor. Then we use a protection circuit, which consist of two diode connected in anti-parallel, to limit the voltage output to the monitor

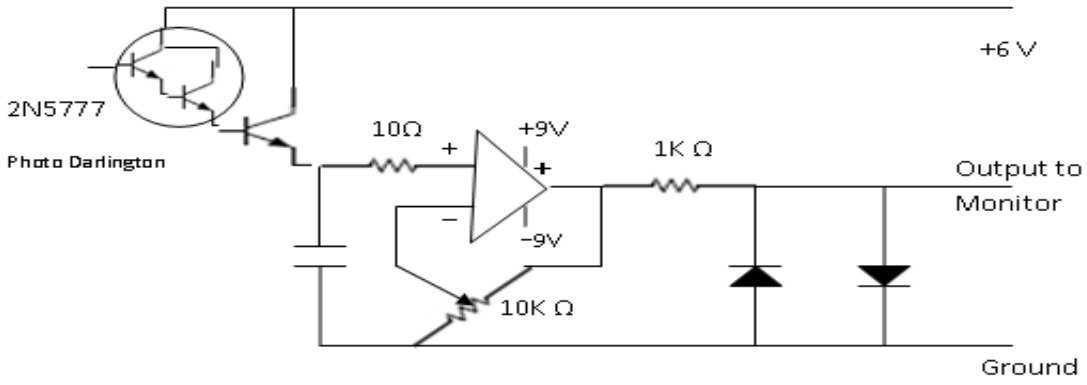

Fig.9. Proposed Receiver circuit

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V. FUTURE WORK

In the Receiver the chief problem in this type of communication is the large scale 'noise' light e.g. sunlight etc. that is present here, there and everywhere. So once we remove this type of noise, we are ready with the cheapest transmitter/ receiver. We do this by getting a frequency selective receiver. But our path still had a lot of challenges and problems. These problems were like:

1. Interference with ambient light in case we use a Light Detecting Resistance (LDR).
2. Over-heating in case of a LASER, destroys the functionality of a laser torch very soon. It does not allow a torch to be lit continuously for more than 3-4 minutes.
3. Laser requires a minimum threshold voltage, so an offset is required to be supplied.

VI. CONCLUSION

In this paper, we have got a daunting task of making possible a wireless communication from the Processor of a computer to the Monitor. We further found that worldwide research on the topic on these days, and the wireless monitor is not yet properly in the market (only some trial basis ones have been launched). Worldwide production of the Wireless Monitor as of now is mostly based on lowered resolution, serial communication. We have attempted to transfer the signals in a parallel communication method. We used light modulation, as it has the least Electromagnetic interference. Once the wireless monitor is launched, it will be an excellent utility for people who like to fix the bulky CPU, and carry the light LCD monitor to another room. Further it will help in demonstration classes, where a teacher might wish to broadcast to all other.

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