INDOR NAVIGATION SYSTEM FOR VISUALLY IMPAIRED PEOPLE USING LIFI

A PROJECT REPORT

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SRM UNIVERSITY

(Under Section 3 of UGC Act, 1956)

BONAFIDE CERTIFICATE

Certified that this project report titled "**INDOR NAVIGATION SYSTEM FOR VISUALLY IMPAIRED PEOPLE USING LIFI**" is the bonafide work of "**K INDRAKANTH [RA1411004010391], U AKASH VARMA [RA141100402000392], K CHARAN TEJ [RA1411004010418], ,** ", who carried out the project work under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

Visible Light Communication (VLC) is emerging as a next generation data transmission method for short-range communication applications. In this paper we implement and characterize two prototype stereo audio streaming methods utilizing VLC. Software architecture is developed to process and stream data. The software architecture is bridged with a hardware section, which facilitates free-space VLC channel, over a Universal Serial Bus (UART) to serial interface. A particularly attractive feature of our system is that it uses commonly available, low-cost components which enable its implementation in everyday applications.In the proposed system, we are implemented the data transmission through Li-fi technology. The data which is transmitted through Li-fi transmitter and received another side receiver section called Li-fi receiver and see in the PC. Here, Arduino Mega Microcontroller is used. LCD shows the status. And at the same time Bluetooth section used to navigate the outdoor section.

ACKNOWLEDGEMENTS

I would like to express my gratitude to my guide Ms.T Ramya her valuable guidance, consistent encouragement, personal caring, timely help and providing us with an excellent atmosphere for doing project. All through the work, in spite of her busy schedule, she has extended cheerful and cordial support to me for completing this project work.

Team

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ABBREVIATIONS

LIST OF SYMBOLS

α, β	Damping constants
θ	Angle of twist, rad
ω	Angular velocity, rad/s
b	Width of the beam, m
h	Height of the beam, m
$\{f(t)\}$	force vector
$[K^e]$	Element stiffness matrix
$[M^e]$	Element mass matrix
$\{q(t)\}$	Displacement vector
$\{\dot{q}(t)\}$	Velocity vector
$\{\ddot{q}(t)\}$	Acceleration vector

CHAPTER 1

ABSTRACT

The spurious (interfering or continuous) tones in the output of a fractional-N PLL can be reduced by replacing the ÎŤÎč modulator with a new type of digital quantizer and adding a charge pump offset combined with a sampled loop filter. It describes the underlying mechanisms of the spurious tones, proposes techniques that mitigate the effects of the mechanisms, and presents a phase noise cancelling 2.4GHz ISM-band CMOS PLL that demonstrates the techniques.

1.1 INTRODUCTION

1.Most wireless communication systems require local oscillators for up-conversion and down-conversion of their transmitted and received signals.

2.The spectral purity of the local oscillator is a critical factor in overall transceiver performance.

3.In addition to dictating the maximum acceptable phase noise power in various frequency bands.

4.Most standards require that spurious tones in the local oscillatorâĂŹs output be highly attenuated in critical frequency bands.

5.FRACTIONAL-N FREQUENCY SYNTHESIZERS provide high-speed frequency sources that can be accurately set with very high resolutionâĂŤa valuable feature for many communication systems. A fractional-N synthesizer includes

5.1 Phase-frequency detector (PFD) 5.2 Charge pump 5.3 Loop filter 5.4 Voltage-controlled oscillator (VCO)

LITERATURE SURVEY

1.2 Jitter and phase noise in ring oscillators

Ali Hajimiri, Sotirios Limotyrakis, Thomas H. Lee

A companion analysis of clock jitter and phase noise of single-ended and differential ring oscillators is presented. The impulse sensitivity functions are used to derive expressions for the jitter and phase noise of ring oscillators. The effect of the number of stages, power dissipation, frequency of oscillation, and shortchannel effects on the jitter and phase noise of ring oscillators is analyzed. Jitter and phase noise due to substrate and supply noise is discussed, and the effect of symmetry on the up-conversion of 1/f noise is demonstrated. Several new design insights are given for low jitter/phase-noise design. Good agreement between theory and measurements is observed.

1.3 Start-up Analysis for Differential Ring Oscillator with Even Number of Stages

Zhang,Hai-gang Yang, Fei Liu, Yuan-feng Wei, Jia Zhang

The start-up conditions for differential oscillator with an even number of stages are analyzed in this paper. Compared with those that have an odd number of stages, such oscillators may have two stable equilibrium states besides an astable equilibrium state in which the circuits can start to oscillate. To avoid the risk of possible latching up into the stable states, an additional start-up circuit technique is proposed. The proposed circuit should also reduce the start-up time. The theory is further confirmed with the design and fabrication of a 4-stage against 3-stage differential ring VCO in a PLL clock generator based on a 0.13UM CMOS process.

1.4 Design procedure

Voltage controller are the heart of Voltage-controlled-oscillators (VCOs) are the heart of every wired and wireless communica-tion system, including phase-lock-loop (PLL),clock-data-ecovery (CDR), serial-link-radio, digital-millimeter-radar (DMR), CPUs, and microprocessor-based systems. Low phase noise and wideband frequency coverage are two of the most crucial issues inVCO design(s)

CHAPTER 2

SYSTEM MODEL

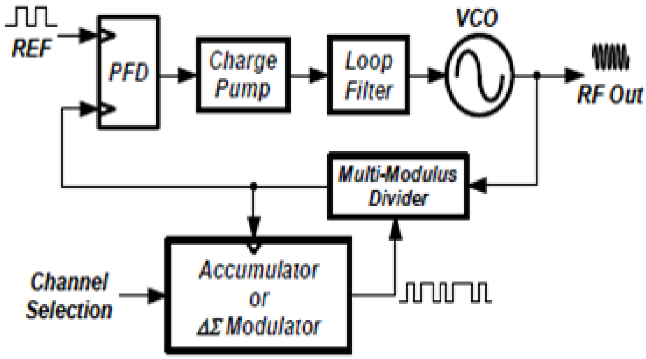

Figure 2.1: Block Diagram

2.1 Phase Frequency Detector

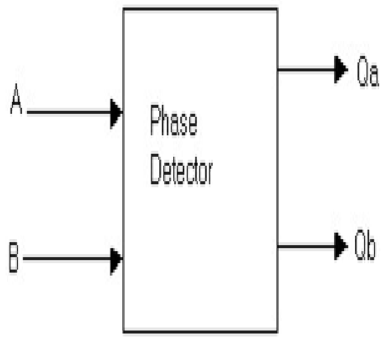

Figure 2.2: Block Diagram

A phase frequency detector(PFD) is an asynchronous circuit originally made of four flip-flops Some signal processing techniques such as those used in radar may require both the amplitude and the phase of a signal, to recover all the information encoded in that signal. One technique is to feed an amplitude-limited signal into one port of a product detector and a reference signal into the other port. The output of the detector will represent the phase difference between the signals.

2.1.1 Phase Frequency Detector

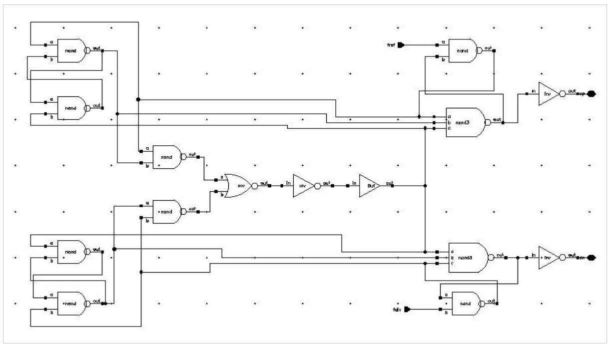

Figure 2.3: Block Diagram

2.2 Charge Pump

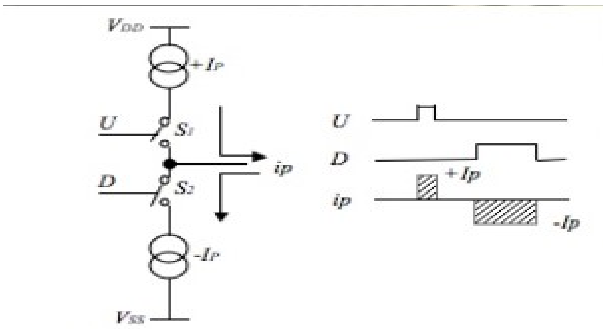

Figure 2.4: Block Diagram

A charge pump is a kind of dc to dc converter that uses capacitors for energetic charge storage to raise or lower voltage. Charge-pump circuits are capable of high efficiencies, sometimes as high as 90âĂŞ95

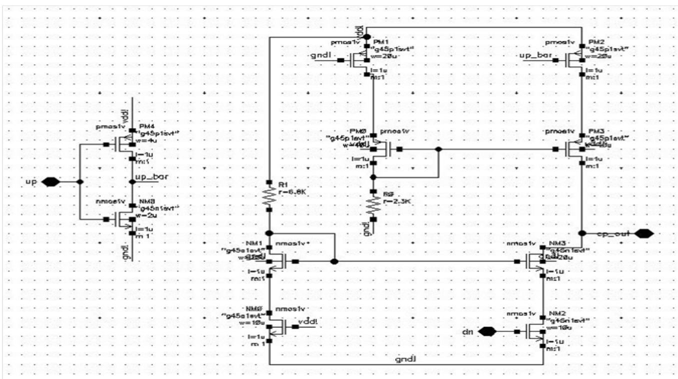

Figure 2.5: Block Diagram

2.3 LoopFilter

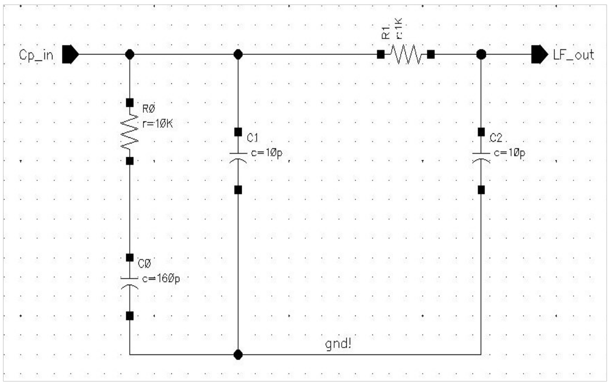

Figure 2.6: Block Diagram

A low-pass filter (LPF) is a filter that passes signals with a frequency lower than a certain cut off frequency and attenuates signals with frequencies higher than the cut off frequency. The exact frequency response of the filter depends on the filter design. A low-pass filter is the complement of a high-pass filter.

2.4 VCO

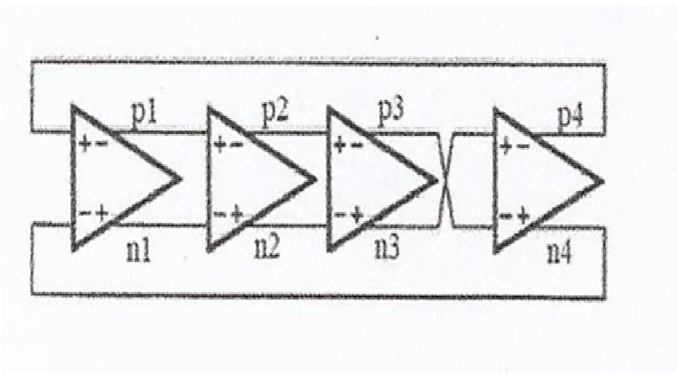

Figure 2.7: Block Diagram

A voltage controlled oscillator is an electronic oscillator whose oscillation frequency is controlled by a voltage input. The applied input voltage determines the instantaneous oscillation frequency. Consequently, a VCO can be used for frequency modulation (FM) or phase modulation (PM) by applying a modulating signal to the control input. A VCO is also an integral part of a phase-locked loop. Here a ring type VCO composed of differential amplifier circuits is used.

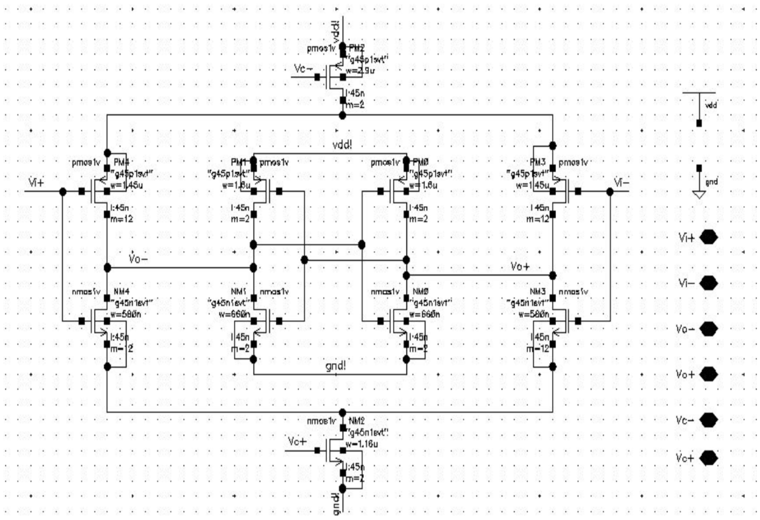

Figure 2.8: Block Diagram

CHAPTER 3

CONCLUSION

The Entire Project Document should have a **maximum of 80 Pages** (from cover to cover).

The Project Document along with Application Software should be submitted in a Soft Copy (CD)

N.B.: Number of Copies to be submitted: Guide - 1 hard copy, Department Library -1 hard copy & Each Candidate -1 hard copy and Soft Copy (in CD)- 2 copies

CHAPTER 4

FUTURE ENHANCEMENT

APPENDIX A

VECTOR ALGEBRA

A.1 Product of Two Vectors

The product of two vectors are may be a scalar product or vector product. The scalar product of two vectors is also called as dot product. It is defined as $\vec{a}.\vec{b} = |\vec{a}||\vec{b}|cos\theta$ where θ is the angle between the two vectors $\vec{a}$ and $\vec{b}$

the cross product or vector product is a binary operation on two vectors in three-dimensional space and is denoted by the symbol $\times$. The cross product $\vec{a} \times \vec{b}$ of two linearly independent vectors $\vec{a}$ and $\vec{b}$ is a vector that is perpendicular to both and therefore normal to the plane containing them.

APPENDIX B

MATRIX ALGEBRA

B.1 Matrix Multiplication

Matrix multiplication is a binary operation that takes a pair of matrices, and produces another matrix. Numbers such as the real or complex numbers can be multiplied according to elementary arithmetic. On the other hand, matrices are arrays of numbers, so there is no unique way to define multiplication of matrices. As such, in general the term "matrix multiplication" refers to a number of different ways to multiply matrices.