

To get familiarised with the specifications of a patent application (ECE- Gaurav Kumar Tomar)

Application number - 202331009347 – PDF can be opened to show various parts.

Objectives are -

- 1. Understanding Patent Structure**
- 2. Practical Insight**
- 3. Overview of a patent application**

The complete specification of a patent is a detailed document that outlines the invention in full. It is a legal requirement to define the invention clearly and completely so that a person skilled in the art can replicate it.

Various parts are –

1. Title of the Invention --- around 15 words -A concise and specific title describing the essence of the invention

**METHOD FOR IMPROVEMENT OF ERROR PERFORMANCE OF
ORTHOGONAL FREQUENCY DIVISION MULTIPLEXING USING
SOFTWARE DEFINED RADIO**

2. Field of the Invention/Background of the Invention - Briefly describes the invention , prior art, solution to problem..

BACKGROUND

[0002] Background description includes information that may be useful in understanding the present subject matter. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[0003] Orthogonal frequency division multiplexing (OFDM) is an attractive waveform candidate for wireless broadband communication. Apart from being spectrally efficient with overlapping subcarriers, OFDM system enables a very simple receiver implementation and effectively combats inter-block interference (IBI) with cyclic prefix (CP).

3. Object of the Invention and/or Summary - objectives of the invention, concise summary of the invention.

OBJECTS OF THE DISCLOSURE

[0001] It is therefore the object of the present disclosure to overcome the aforementioned and other drawbacks in prior method/product/apparatus.

[0002] It is a primary object of the present disclosure is to improve the performance of the OFDM system using using Software Defined Radio (SDR).
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SUMMARY

10 [0006] Solution to one or more drawbacks of existing technology and additional advantages are provided through the present disclosure. Additional features and advantages are realized through the technicalities of the present disclosure. Other embodiments and aspects of the disclosure are described in detail herein and are considered to be a part of the claimed disclosure.

15 [0007] The present disclosure offers a solution in the form of a method to improve the error rate performance of orthogonal frequency division multiplexing (OFDM) using Software Defined Radio (SDR). The method comprises of opening a transmit session in an Software Defined Radio (SDR) system and generating a

4. Brief Description of Drawings- Lists and briefly explains the figures, diagrams, or illustrations included in the patent

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BRIEF DESCRIPTION OF THE DRAWINGS

[0015] It is to be noted, however, that the appended drawings illustrate only typical embodiments of the present subject matter and are therefore not to be considered for limiting of its scope, for the present disclosure may admit to other
5 equally effective embodiments. The detailed description is described with reference to the accompanying figures. In the figures, a reference number identifies the figure in which the reference number first appears. The same numbers are used throughout the figures to reference like features and components. Some embodiments of system or methods or structure in accordance
10 with embodiments of the present subject matter are now described, by way of example, and with reference to the accompanying figures, in which:

[0016] Fig. 1 illustrates an example method in accordance with an exemplary embodiment of the present invention;

[0017] Fig. 2 illustrates an exemplary block diagram of data reference interleaver
15 in accordance with an exemplary embodiment of the present invention;

[0018] Fig. 3 illustrates an exemplary block diagram for zero padding in accordance with an exemplary embodiment of the present invention;

[0019] Fig. 4 illustrates an exemplary block diagram for Cyclic Prefix Addition in accordance with an exemplary embodiment of the present invention;

5. Detailed Description of the Invention- comprehensive section of the specification, Provides a step-by-step explanation of how the invention works, Includes examples, embodiments, and variations of the invention, Uses reference numerals for drawings, if included, to explain the invention, Written in a manner that enables a person skilled in the art to reproduce the invention

DETAILED DESCRIPTION

[0030] While the embodiments of the disclosure are subject to various modifications and alternative forms, a specific embodiment thereof has been shown by way of example in the figures and will be described below. It should be understood, however, that it is not intended to limit the disclosure to the particular forms disclosed, but on the contrary, the disclosure is to cover all modifications, equivalents, and alternatives falling within the scope of the disclosure.

[0031] The terms “comprises”, “comprising”, or any other variations thereof used in the disclosure, are intended to cover a non-exclusive inclusion, such that a device, system, assembly that comprises a list of components does not include only those components but may include other components not expressly listed or inherent to such system, or assembly, or device. In other words, one or more elements in a system or device preceded by “comprises... a” does not, without more constraints, preclude the existence of other elements or additional elements in the system or device.

6. **Claims-** Defines the legal scope of protection sought for the invention.. (Independent claims: Broad claims covering the core inventive concept. Dependent claims: Narrower claims adding specific details to independent claims)... Claims must be clear, precise, and supported by the description.

We Claim:

1. A method (100) to improve the error rate performance of orthogonal frequency division multiplexing (OFDM) using Software Defined Radio (SDR), the method (100) comprises of steps:
 - 5 opening (101) a transmit session in the SDR and generating a transmit baseband signal;
 - processing (102) the transmit baseband signal by SDR and converting the transmit baseband signal into an analog form, the processing (102) comprises of:
 - 10 adding reference symbols along with data symbols at equal intervals to the transmit baseband signal thereby forming a pilot symbol for channel estimation,
 - 15 inserting a zero padding to the transmit baseband signal and creating a zero padded data symbol array,
 - performing an Inverse Discrete Fractional Fourier Transform (IDFRFT) on a zero padded transmit baseband signal,
 - 20 adding a Cyclic Prefix (CP) before an N point transmit baseband signal after performing the IDFRFT and stop the transmit session;

7. **Abstract - A brief summary (150-250 words) of the invention which provides an overview for patent examiners and the public.**

ABSTRACT

**METHOD FOR IMPROVEMENT OF ERROR PERFORMANCE OF
ORTHOGONAL FREQUENCY DIVISION MULTIPLEXING USING
SOFTWARE DEFINED RADIO**

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The present subject matter disclosed herein relates to a method (100) of communication based on a Discrete Fractional Fourier Transform (DFRFT) to improve the error rate performance of orthogonal frequency division multiplexing (OFDM). The method (100) includes opening (101) a transmission in an
10 Software Defined Radio (SDR) system and generating a transmit baseband signal. Processing (102) the transmit baseband signal by adding reference symbols, inserting a zero padding, performing an Inverse Discrete Fractional Fourier Transform (IDFRFT) and adding a Cyclic Prefix (CP). Then, configuring (103) properties of a received signal from the transmit session by the SDR, wherein the
15 SDR fetches an IQ signal and processing (104) the IQ signal by using a moving average filter, calculating estimated arrival time, removing cyclic prefix, calculating N-point DFRFT and removing zero padding to estimate channel coefficient.

20 {TO BE PUBLISHED WITH FIG. 1}

8. **Drawings- Diagrams to visually explain the invention.**

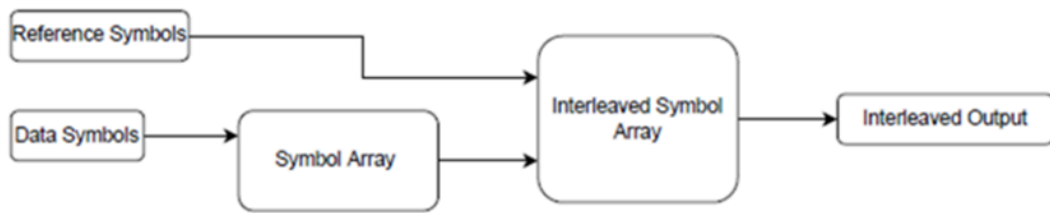


FIGURE 2

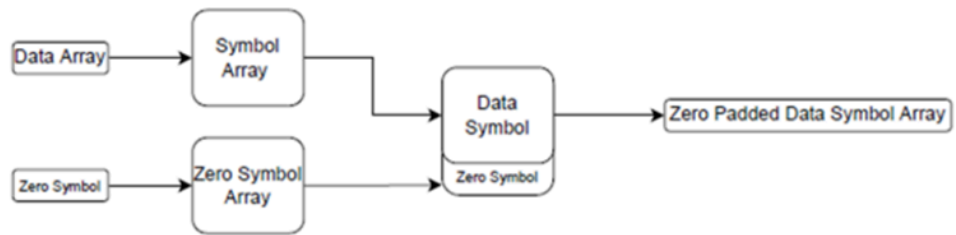


FIGURE 3

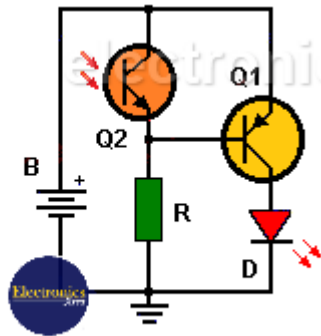
202331009347... PDF to opened showing these parts.

A second application can be opened - 202047031147

Further exercise could be given—

A further example may be taken- to draft an application -

Automatic night light



Q2 - Phototransistor, D-led, Q1- Switch, R- resistor.

Title — “Automatic night Light”

TITLE OF THE INVENTION

Automatic night Light

FIELD OF THE INVENTION

The present invention relates to electronics and lighting systems, specifically to an automatic operation in low-light conditions.

BACKGROUND OF THE INVENTION

Traditionally, a light had to be turned on by manual intervention each time illumination was perceived to be low or not sufficient. For example, during nighttime or in dimly lit areas, it had to be manually done. Manual dependency could sometimes cause inconvenience and even accidents when immediate lighting is necessary, like in dark navigation or emergency response situations like in a staircase. The lack of automatic lighting solutions not only causes delays but may

also pose safety risks, especially for individuals with limited mobility or in environments prone to hazards

SUMMARY OF THE INVENTION

The invention focuses on providing an automatic lighting solution to illuminate areas efficiently without manual intervention. The LED light is turned on whenever there is low. light.

BRIEF DESCRIPTION OF DRAWINGS

- Figure 1: Perspective view of the
 - Figure 2: Circuit diagram showing the connection between the LED array, light sensor, and control circuit.
 - Figure 3: Cross-sectional view of the housing and internal components.
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DETAILED DESCRIPTION OF THE INVENTION

..... A device contains LED array, light sensor and a control circuit. The system is powered by AC power which is converted appropriately to DC power for the control circuit. The control circuit has a photodiode which turn on the light when illumination falls below a certain threshold.

CLAIMS

1. A lighting device comprising
 - an LED array;
 - Light sensor to detect ambient illumination levels;
 - a control circuit connected to the light sensor and the LED array, which turns on the LED array for illumination based on the signal received by the light sensor and threshold.

2. The lighting device as claimed in claim 1, wherein the Light sensor is a photodiode.

ABSTRACT

... Led array turning on when illumination falls below a threshold