Study & Analysis the BER & SNR in the result of modulation mechanism of QR code

Panpatte Arvind K[1], Dr.H.S.Fadewar[2] ,Shivpuje Prakash R.[3]

Sainath Munde[4] Maroti Munde[5]

[1-5]*Department of Computer Science, School of Computer Science, SRTMU NED, Vishnupuri, Nanded-431 606, (Maharashtra), India.*

.

Abstract

The data is transmitting between the wireless devices such as handheld electronic devices that time two-dimensional barcode or 2-D barcodes used in that to achieving better results. Whenever the user transferring the number of images from one cell phone to another that time it can be transferred using the LCD which are used to captured and decoded by using the other device. In this research paper we are used the modulation mechanism in two dimensional barcode and also we are checked the performance of the system. In our proposed module we are combined the Differential Phase Shift keying i.e. DPSK with the Orthogonal Frequency-Division Multiplexing i.e. OFDM, for obtaining the contagious frequency domain elements. To implementing such type of system the movements of camera when the user capturing the image, image blur and leakage of light within neighbouring pixel of an LCD, so we worked on this issue and trying how to overcome on it.

Keywords: Data Transmission in between the devices, OFDM, DPSK Modulation techniques, BER and SNR.

I. INTRODUCTION

A Barcode is a simple representation of data which is machine readable. The data which is in barcode carries from one place to another when the product moves. The representation of data is by varying the spacing of parallel lines and width. There are two variants of barcode developed as

- One Dimensional (1D)
- Two Dimensional (2D)

The other name of one dimensional barcode is linear barcode; it is in the form of vertical lines with different width as well as different space and pattern. The other name of two-dimensional barcode is matrix code, which is two-dimensional way to design the barcode as well as represent the information. It is quite similar to linear barcode but it can represent more and more data per unit area as compare to linear barcode.

In the invention of two dimensional or matrix barcodes there are large number of cost-effective codes and their application that transfer complex data like storing contact information, URL's among other things in which QR(Quick Response) codes become increasingly popular. Normally some of the efforts to developed matrix barcode have been dedicated to barcode displayed on a simple paper that means usually it can use the barcode which is present on the paper. And when we replace that paper or book with tablet and e-book reader one could gaze upon the paper with LCD may open another promising front for broader applications of two-dimensional barcodes as a mean of data transfer.

In this research we studied the implementation of transferring data between two handheld cell phones through a series of two dimensional QR code, to achieving maximum or under 10 kbps for the mobile devices. After that in some advanced developed systems in which transmission and reception of bit rates more than 14 kbps in between digital camera and a computer monitor over the distance of up to 4 meters. When the distance is increased to 14 kbps the rate drops to over 2 Mbps. The best performance is achieved using more effective scheme of coding as well as modulation for image blur and pixel to pixel light leakage. The performance of QR decoders greatly reduces by the image blur and light leakage but it can limited effect on OFDM modulation. Furthermore their performance degradation limited to known portions of the decoded data. Orthogonal frequency subcarriers transfer data & limited blur in image, a low pass filter to high frequency constituents such that low frequency data bits are transmitted entire by the OFDM modulation. This OFDM modulation method requires natural connection to discover the data bits correctly. In this current study extends the detail notion through improve on modulation scheme to lessen LCD-CAMERA relative movements when capturing single image or frame which results blur in the captured images. This kind of failure which is affected on the performance of QPSK modulated OFDM signals. The DPSK-OFDM scheme which is simply nothing but the DPSK method throughout this study, which is achieved by adding or inputting data in phase differences of adjacent frequency leading components. Deformation of blur in image motion influence neighbouring frequency components negligibly; data may be transmitted trustworthy even in the nearness of high LCD,

camera relative motion. To make the most of data transmission rate, it should extracting large data from a single image shown on an LCD & then increases the rate at which following order frames will be decoded. This type of issue with any method that is introduced should efficiently consume the available bandwidth considering motion deformation. Earlier studies confirmed the likelihoods of such systems and have addressed the effect of single contortion like linear misalignment, defocus blur on the modulation methods under consideration, but they have not provided a relative opinion of these systems in a restricted environment. Moreover no comparisons were made in case of LCD motions which greatly affect the performance of the system in applications that absorb handheld camera phone receivers.

As an importance, this study introduces DPSK-OFDM as a means of justifying LCD camera motion contortion and sets a series of simulations based on mathematical modelling for vague impression and movement on the received images in a way that the deformation would be the same for Pulse Amplitude Modulation, Quadrature Phase-Shift Keying-Orthogonal Frequency Divisional Multiplexing and Differential Phase Shift Keying- Orthogonal Frequency Divisional Multiplexing modulations.

As a result, consistent evaluation can be made between these major modulation methods anyway of other parameters disturbing the piece of such sensible systems.

II. OBJECTIVE

- ✓ Developing the system
- ✓ Data transmission in between two handheld mobile devices
- ✓ Analysis the performance

III. PROPOSED METHODOLOGY

3.1 OFDM

Data transmitted in parallel to multiple carries that overlap in frequency transmission and also orthogonal to each other or OFDM is a FDM i.e. frequency division multiplexing method used for multi-carrier modulation of digital data. The data is carried to using number of parallel data streams or channels used by the closely spaced orthogonal sub-carrier signals. Orthogonal Frequency Division Multiplexing (OFDM) has been engage important notice due to its outstanding performance under rigorous channel circumstance. The rapidly growing application of OFDM includes Wi-MAX, DVB/DAB and 4G wireless systems. It can be viewed as a either a modulation technique viewed by the relation between input and output signal or multiplex technique viewed by the output signal which is linear sum of the modulated signal and it does not required bandwidth and it is a multi carrier transmission

technique, which divides the available spectrums into many sub carriers each one being modulated by a data rate streams. OFDM strictly relation between the carriers and these carriers are orthogonal to each other and each subcarrier can be packed tightly. It contains the high data rates as compare to other communication system, and also it transforms the frequency with the particular channels. Presently the OFDM is widely used in various applications and also used in various international standards to achieving the modulation scheme.

3.2 DPSK-OFDM

The LCD technology is improving on pixel to pixel isolation that time the capture images deformation still remain and affecting the neighboring pixels of the barcode mixed the image and then result is nothing but the Inter Symbol Interference. To solving such type of inter symbol interference problem, the barcode image as a wireless radio signal for the ISI reduction technique have been verified successfully. So the best modulation method which is known as Orthogonal Frequency Division Modulation i.e. OFDM, is used to capable of coping rigorous condition when the limited communication channel band is available. When the restriction on power, multiple channel paths, limited band that time it is more capable to transfer a lot of narrow-band signals in parallel in its place of a single high bandwidth signal.

Fig1: Flowchart of proposed methodology

IV. RESULT AND ANALYSIS

Figure 1: Entering Text "world" into Text Field and retrieval that text.

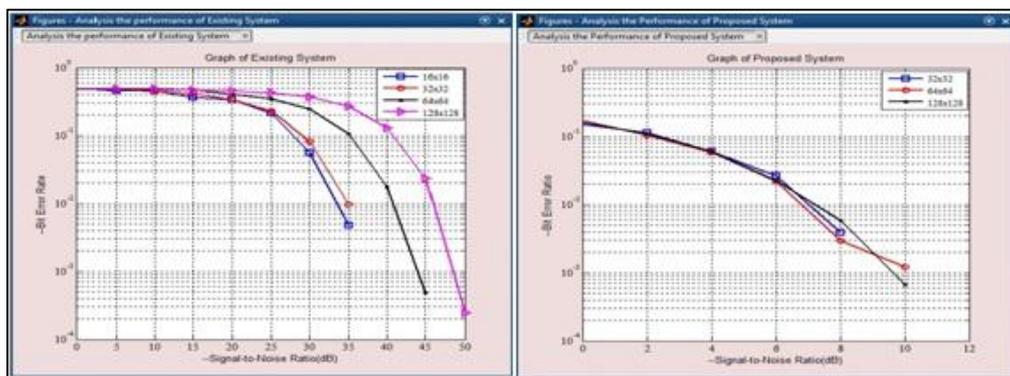**Figure 2:** Generated & received image of QR code

Figure 3: Analysis the Existing & Proposed System for Entered Text of QR code is "world"
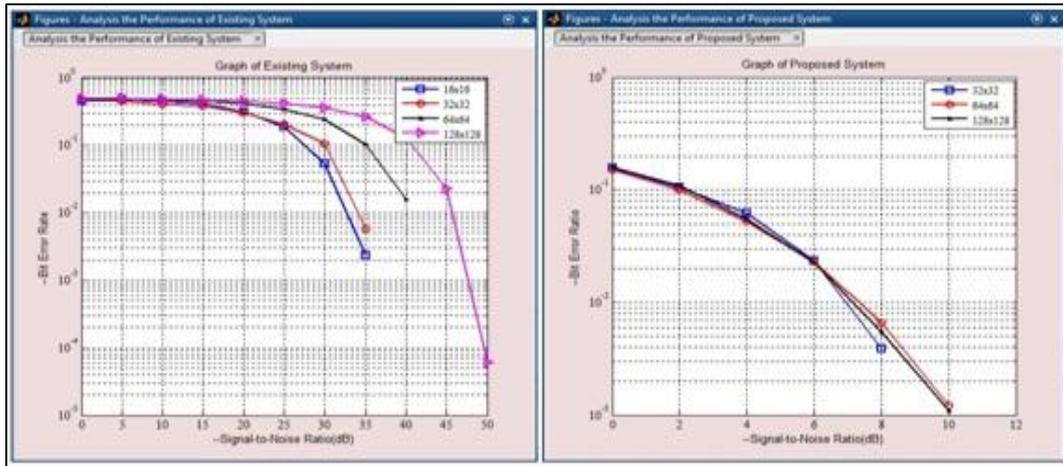
Figure 4: Analysis the Existing & Proposed System for Entered Text of QR code is "national"
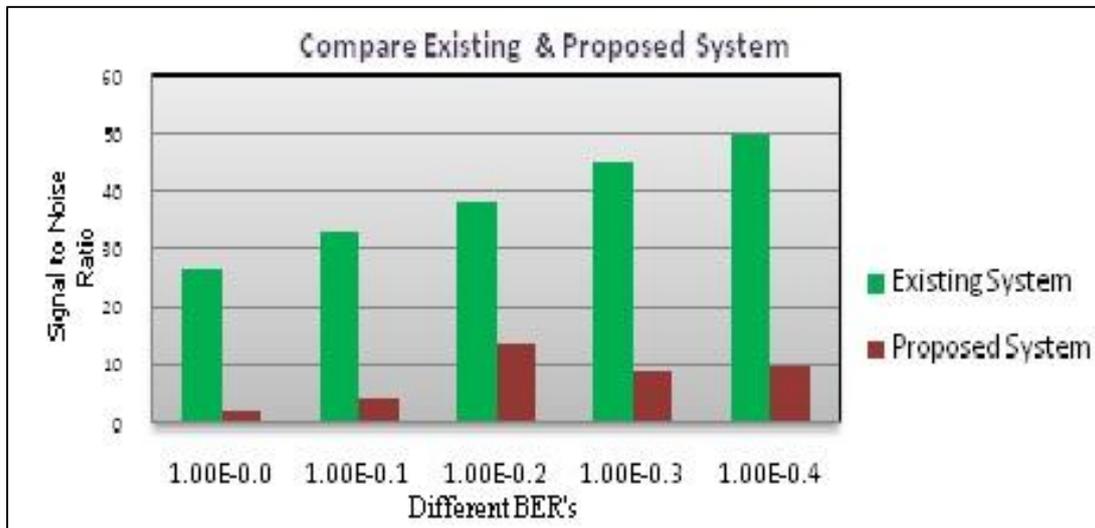

Figure 5: Comparison of Existing and Proposed System

V. CONCLUSION

In this paper we are design the proposed system for performing the better modulation mechanism techniques in between the handheld device communication. The proposed system and performance graphs are shown in the figures from 1 to 5. Analysing the comparison of existing as well as proposed system, in that the SNR of the existing system is gradually increase and BER decrease but in the proposed system decreasing the SNR and BER as compare to existing system in DPSK-OFDM.

REFERENCES

[1] Amin Motahari, Malek Adjouadi, "Barcode Modulation Method for Data Transmission in Mobile Devices".

[2] Information Technology—Automatic Identification and Data Capture Techniques—QR Code 2005 Bar Code Symbology Specification, ISO/IEC 18004:2006, 2006.

[3] R. Morrison, L. Cimini, and S. Wilson, "On the use of a cyclic extension in OFDM," in Proc. 54th IEEE

[4] H. Ochiai and H. Imai, ―Performance Analysis of Deliberately Clipped OFDM Signals,‖ *IEEE Trans. Commun,* Vol. 50, No. 1, pp. 89-101, Jan. 2002.

[5] H.Kato and K. Tan, "Pervasive 2d barcodes for camera phone applications," Pervasive Comput., vol. 6, no. 4, pp. 76–85, Oct. 2007.

[6] Staake, T., Thiesse, F., and Fleisch, E. 2005. Extending the EPC network: the potential of RFID in anti-counterfeiting. In Proceedings of the 2005 ACM Symposium on Applied Computing (Santa Fe, New Mexico, March 13 - 17, 2005). L. M. Liebrock, Ed. SAC '05. ACM, New York, NY, 1607-1612.

[7] S. D. Perli, N. Ahmed, and D. Katabi, "Pixnet: Interference-free wireless links using LCD-camera pairs,"in Proc. Mobicom,2010, pp.137-148.

[8] Rohan Kankapurkar et al, "Comparative study of Barcode, QR-code and RFID System," Int. Computer

[9] Yue Liu, Ju Yang and M. Liu, " Recognition of QR code with mobile phones," in Proc. Chinese Control Decision Conf., Jul 2008, pp 203-206.