Abstract

Mobile networks continue to develop at an exciting pace. In ten years, mobile networks may well support services beyond that of today's multi-megabit fixed connections, while the amount of data traffic on mobile networks could surpass that of today's broadband connection in next decade. As consumer demand grows for ever-richer services and connected lifestyles, mobile network will evolve, and the mobile industry is already hard at work defining the technical solution that will allow mobile networks to meet the growing demand for wireless broadband services, the road to 4G has a mandatory milestone in long term evolution (LTE) as it is a promising technology which will allow backward compatibility besides a higher performance. Wimax, the I worldwide Interoperability for microwave Access, is a telecommunication technology aimed at providing wireless data over a long distance in a variety of ways, from point to point links to full mobile cellular type access. It is based on the IEEE 802.16 standard, which is also called Wireless MAN. The physical layer of these I standard employ multicarrier multiple access schemes such as OFDM/OFDMA and SC-FDMA. The j understanding of these schemes help in analysis of the I interface. The detailed study and analysis of these two I standard and design of their physical layer is done in order to determine data rate between BBIC-RFIC interfaces. The second phase of project deal with modeling of clock and data recovery system. With the increase demand for faster data communication, the preface data rate of communication system has reached multi giga range and higher. At the same time improving technology and a pressure to reduce to pin bunt has pushed these interfaces to go serialized. However such high data rate serial communication architecture, many a times whose clock signal is embedded in the transmitted data, has imposed tremendous challenges for quantifying transmission quality. A widely used figure of merit for evaluation of digital communication system and equipment is bit error rate (BER). A BER at 10e-12 or even lower is often required for most communication system. To measure such a low BER with reasonable accuracy, it would be necessary to capture more than 10e12 samples. As a result the test/simulation time would be excessively long even if the system runs in the GHz range. Thus the conventional testing/ simulation method. Which compare each captured bit for error detection requires a long test/simulation time, often several days. For this reason methods other than straight counting of error would be useful for estimating very low BER. The techines of extrapolation appears to have a considerable promise as an accurate and relatively fast method for obtaining curves of BER vs. SNR and BER vs. jitter.

The procedure is to obtain a single point of curve at relatively high error rate (possibly in range of 10e-4) with a high degree of confidence and then to fit a theoretical error curve (error function or exponential based upon the modulation scheme) through this point. This project discusses this theoretical approach of BER extrapolation along with derivation of relevant equation. At the end the derived equation are verified with the simulation results achieved through MATLAB simulation of high speed DigRF4G link.