Design of Reliable Body Channel Communication Transceiver with Spread Spectrum Clock Generator and PNR Generator

S.Vijayalakshmi
Ph.D. Research Scholar, Department of ECE,
Adhiparasakthi Engineering College,
Melmaruvathur, Chennai, Tamil Nadu, India-603 319.
sankarviji7@gmail.com

V.Nagarajan
Professor, Department of ECE,
Adhiparasakthi Engineering College,
Melmaruvathur, Chennai, Tamil Nadu, India-603 319
nagarajanece31@gmail.com

Abstract—In this work, the communication of a channel in the human body has a characteristic (time-domain) which can be measured at various distances in transmission and various frequencies of a signal by the printed circuit board-an analog frontend board (PCB-AFE) support. Besides, for the wideband signal of Body Channel Communication (BCC), a human body skin acts within a range of 1 Mb/s to 40 Mb/s as the transmission medium. This communication is more stable and attenuating low power while comparing with all another transmission medium in wireless. Moreover, due to the motion of a human body, this communication doesn't get affected. Though, the body antenna gives effects in the communication of a channel of the human body by occurs some interference. The Manchester data acts as encoder and decoder in transmitter and receiver parts respectively, in an AFE-PCB the Manchester encoder data is amplified after receiving the data from end to end channel of a human body. The data quality is improved by 7X sampler in clock data recovery (CDR) circuit. Therefore, the proposed design of reliable BCC Transceiver with SSCG and PNR Generator is processed in XilinxISE14.5, ModelSim Simulator 6.5a (Quartus II 8.1), and Micro wind software tools. It is also implemented in a XilinxXC9572XL kit. The power consumption and delay is reduced up to 90%, speed is increased up to 50% and leakage current is reduced up to 80% in the transmitter part.

Index Terms—Analog Front End (AFE), Body Channel Communication (BCC), Clock Data Recovery (CDR), Printed Circuit Board (PCB), Reconfigurable Frequency Synthesizer (RCFS) and Variable Cymometer (VC).

IRJECE

This is an open access article under the CC BY-SA 4.0 license (https://creativecommons.org/licenses/by-sa/4.0/)