

Simple Multipath Compensation for Frequency Modulated Signals: A Case of Radio Frequency vs. Quadrature Baseband

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Abstract : Radio propagation from point-to-point is affected by the physical channel in many ways. A signal arriving at a destination travels through a number of different paths which are referred to as multi-paths. Research in this area of wireless communications has progressed well over the years with the research taking different angles of focus. By this is meant that some researchers focus on ways of reducing or eluding Multipath effects whilst others focus on ways of mitigating the effects of Multipath through compensation schemes. Baseband processing is seen as one field of signal processing that is cardinal to the advancement of software-defined radio technology. This has led to wide research into the carrying out certain algorithms at baseband. This paper considers compensating for Multipath for Frequency Modulated signals. The compensation process is carried out at Radio frequency (RF) and at Quadrature baseband (QBB) and the results are compared. Simulations are carried out using MatLab so as to show the benefits of working at lower QBB frequencies than at RF.

Keywords : quadrature baseband, radio frequency, multipath compensation, frequency modulation, signal processing

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