



1 Introduction

MIMO refers to the use of multiple transmit and/or receive antennas, enabling higher spectral efficiency in Wireless Systems.

MIMO exploits Multipath Propagation and makes use of antenna diversity against Multipath Fading, being able to achieve better transmission conditions without the need for higher bandwidth or higher transmitting power.

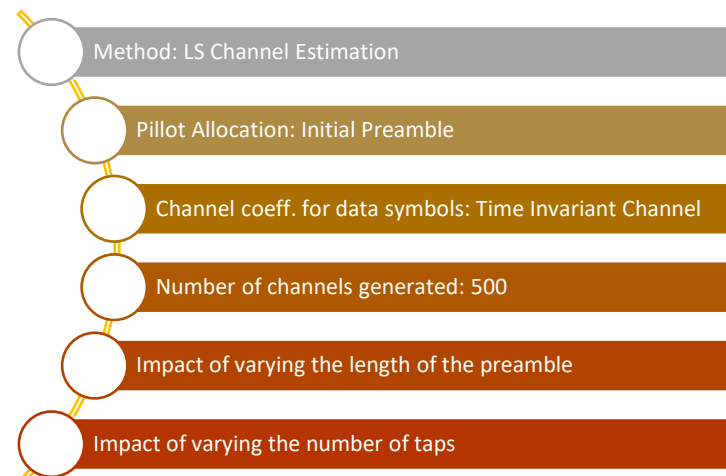
The information in a MIMO System, since it is a Wireless Communication System, is transmitted through a radio channel. For conventional, coherent receivers, the effect of the channel on the transmitted signal must be estimated to recover the transmitted information

2 Objectives

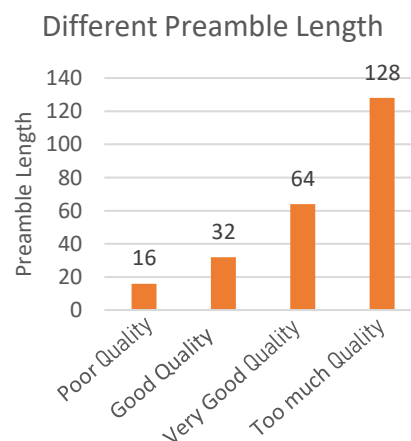
Analyse how the wideband MIMO system would work without prior knowledge of the channel coefficients. This implies that a channel estimation technique will be necessary in order to retrieve the transmitted information. Hence, the objectives are:

- Select the channel estimation technique that suits better for our scenario
- Discuss the different technical aspects to consider when implementing the MIMO channel estimation technique.

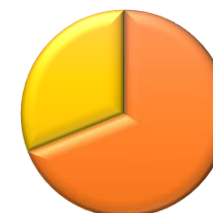
3 Methodology



5 Conclusions



Improvement of the System's Quality



- Increasing Diversity
- Increasing number of taps

4 Results

Figure 1. Impact of varying the length of the preamble in a 2x1 MIMO System

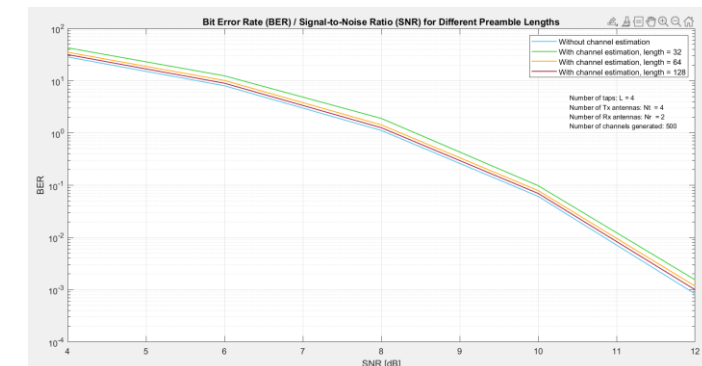
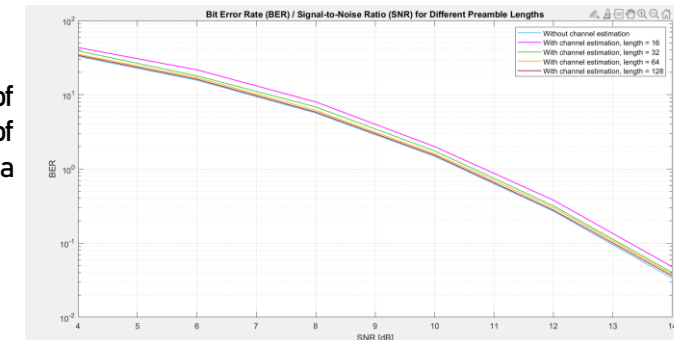


Figure 2. Impact of varying the length of the preamble in a 4x2 MIMO System

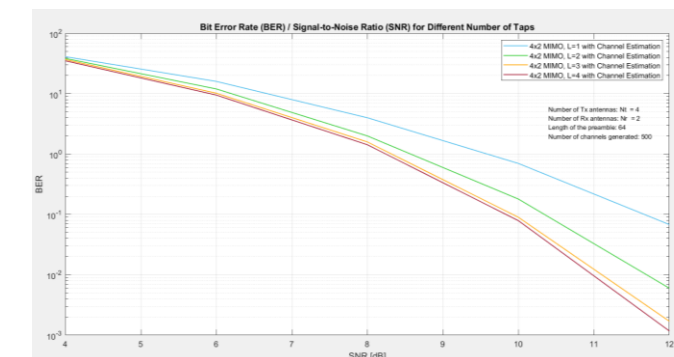


Figure 3. Impact of varying the number of taps in a 4x2 MIMO System