

## **Abstract**



# **1 Introduction**

## **1.1 Background**



## 2 Theory

### 2.1 Problem description

### 2.2 Mathematical Model

#### 2.2.1 Continuous time model

Continuous time small scale fading channel response.  
time varying channel impulse response:

$$h(t, \tau) = \sum_k c_k(t) \delta(\tau - \tau_k(t)) \quad (2.1)$$

received signal  $y = h * x$ , i.e. convolution with channel model.

#### 2.2.2 Time discretization of the model

Assume  $x$  is a time discrete signal with bandwidth  $W$ , thus the pulse is sinc shaped

$$x(t) = \sum_n x[n] \text{sinc}(t/T - n) \quad (2.2)$$

Ideal sampling at rate  $2W$  of  $y$  gives



## **3 Implementation**

### **3.1 Simulaton**

### **3.2 Hardware**

### **3.3 Measurements**

### **3.4 Results**





## 4 Conclusions