

$f = 1700 \text{ MHz}$

70-74dB reflection

$\sim R = 0.1 \rightarrow -10\text{dB}$

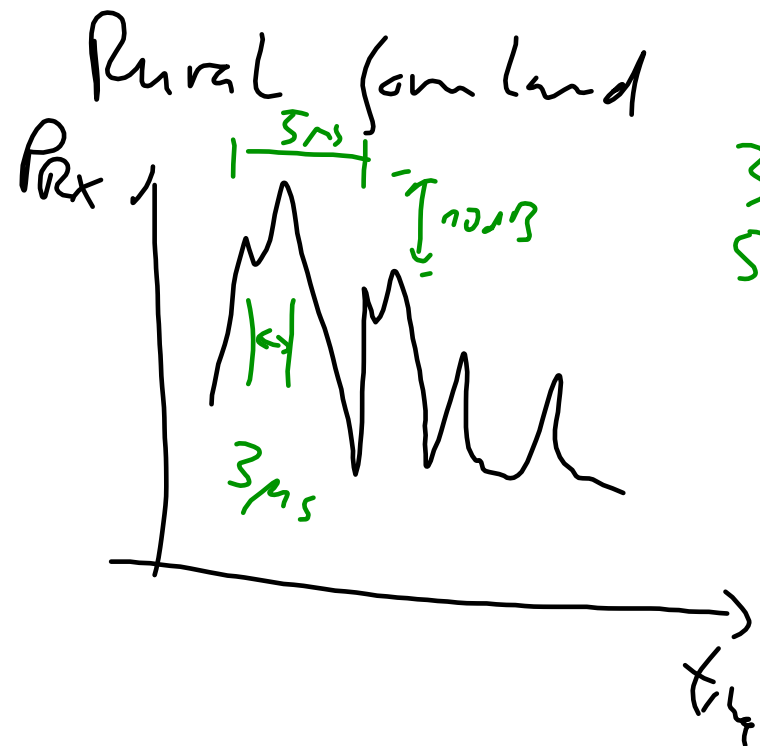
$\Delta t = 0.6 \mu\text{s} \quad 1 \mu\text{s}$

$\Delta S = 1.8 \text{E}2 \text{ m} \quad 3 \text{E}2 \text{ m}$
 $180 \text{ m} \quad 300 \text{ m}$

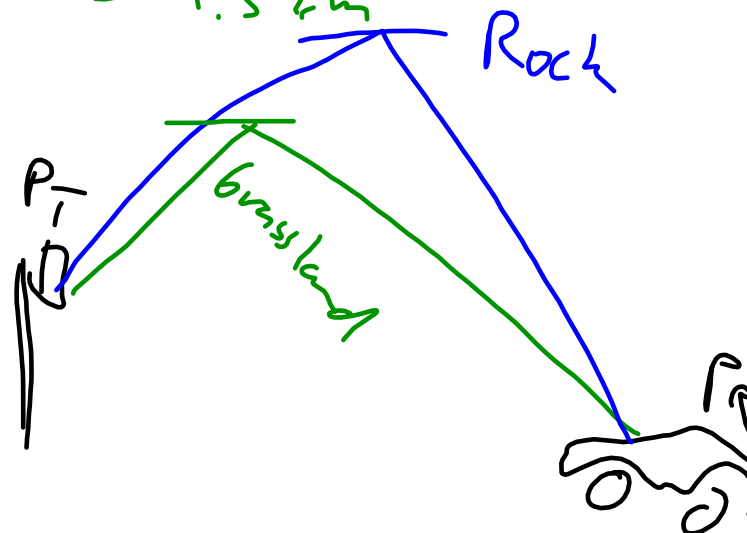
$v = \frac{S \text{ [m]}}{t \text{ [s]}}$

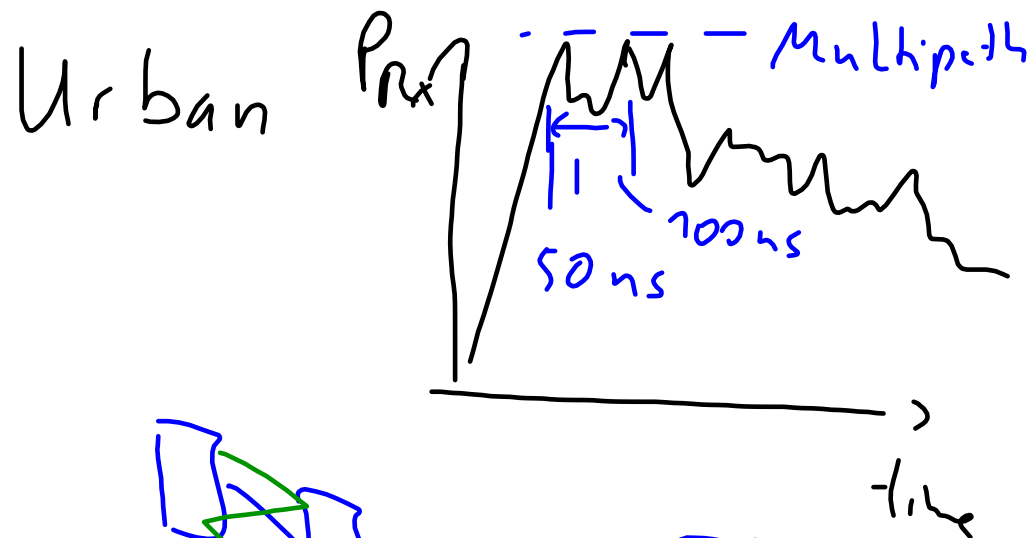
$S = t \cdot v$

$3 \text{E}8 \text{ m/s} \cdot 0.6 \text{E}-6 \text{ s}$



$3 \mu s \sim 900 \text{ km}$
 $5 \mu s \sim 1.5 \text{ km}$



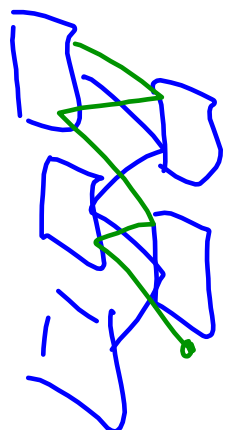


$$\Delta S_1 = 50E-9s \cdot 3E8 \frac{m}{s}$$

$$150E-1m$$

$$\underline{15m}$$

$$\Delta S_2 = \underline{\underline{30m}}$$



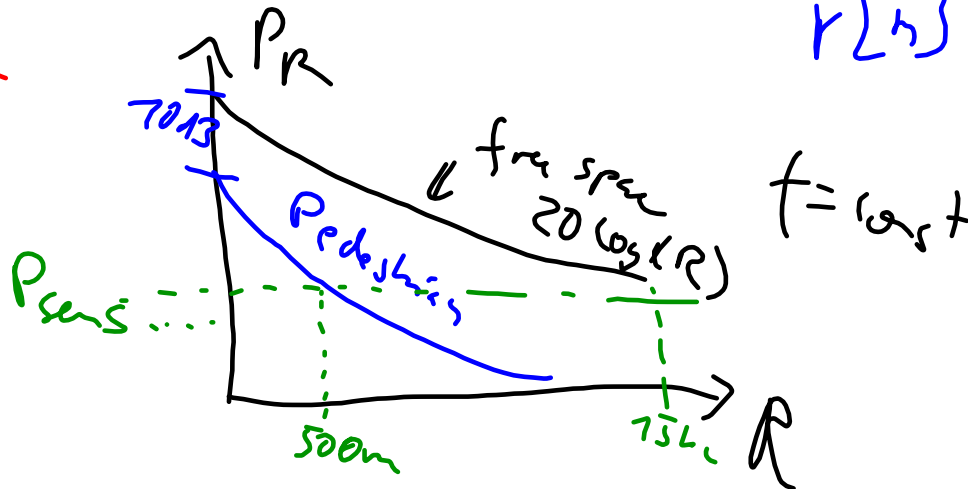
? $L [dB] = 32.4 + 20 \log d [m] + 20 \log f [MHz]$

Free space $L_{loss} [dB] = 92.4 + 20 \log d [m] + 20 \log f [MHz]$

ISI Prediction = $40 + 40 \log r [m] + 30 \log f [MHz]$

(A) Plot

Realistic
Numbers



Exercise B)

$$f = 900 \text{ MHz} \rightarrow f = 2000 \text{ MHz}$$

Table L	R		
	300m	7km	3km

free space

pedestrian

vehicular

Exercise C $L_{\text{indoor}} = 37 \log r \text{ (m)}$

a) calculation

b) Mobile phone, Android Network & Info^{lite}

<https://TEK5110.basicinternet.org>

pass LOSS

Capacity

User: tek5110students

pass: TEK5110

RSSI = -40

Noise floor = -80

$$\left. \begin{array}{l} \text{RSSI} = -40 \\ \text{noise floor} = -80 \end{array} \right\} \begin{array}{l} \text{RSSI} - \text{Noise floor} \\ \text{SNR} = -40 - (-80) = 40 \end{array}$$

