Projeto Final SDR

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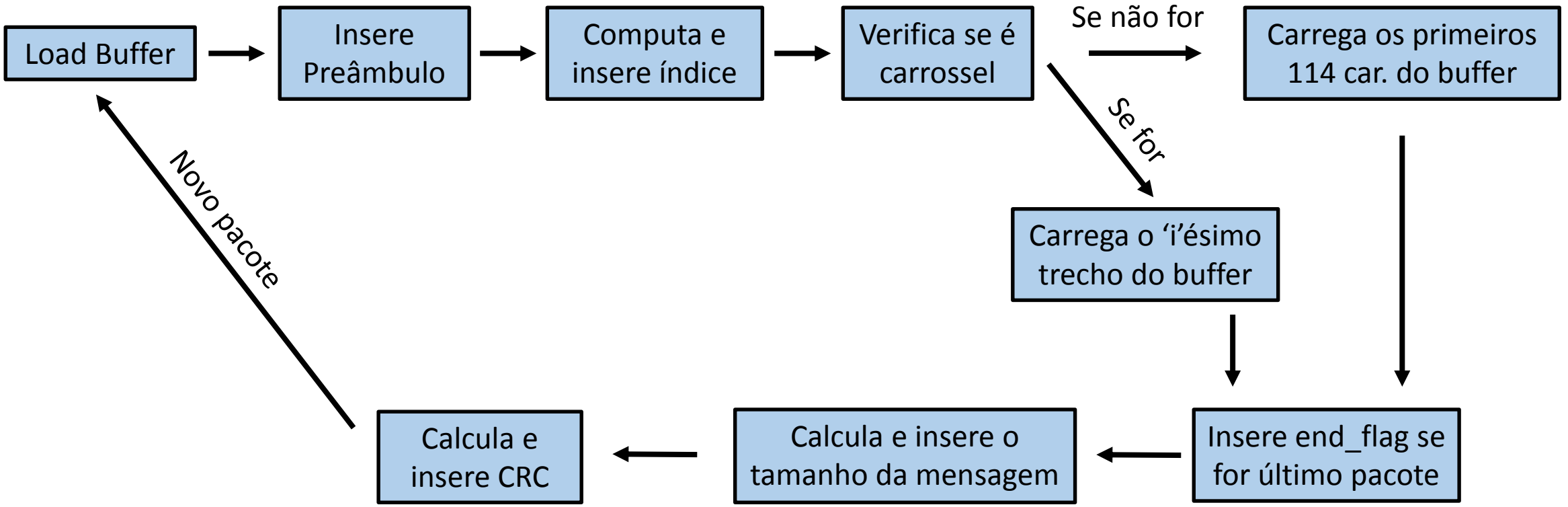
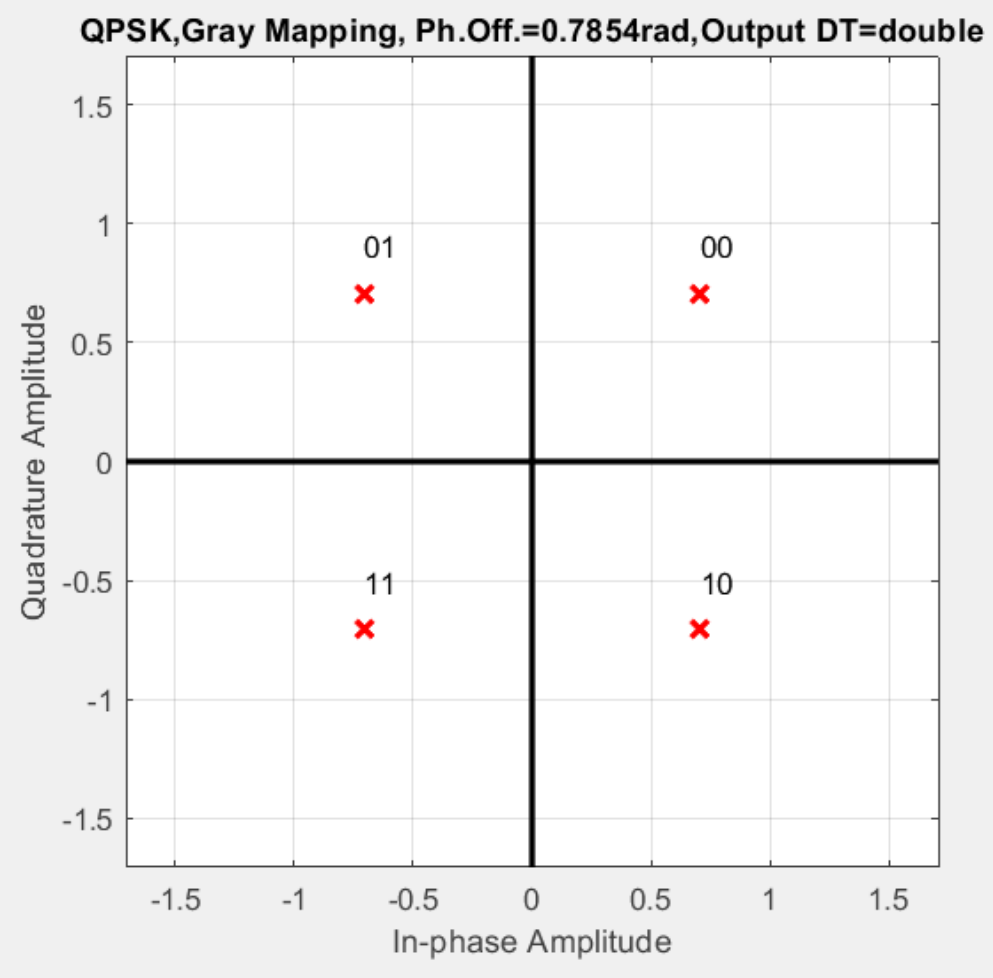
Transmissor

- Gerador de Quadro
- Modulação QPSK
- RRC

Gerador de Quadro

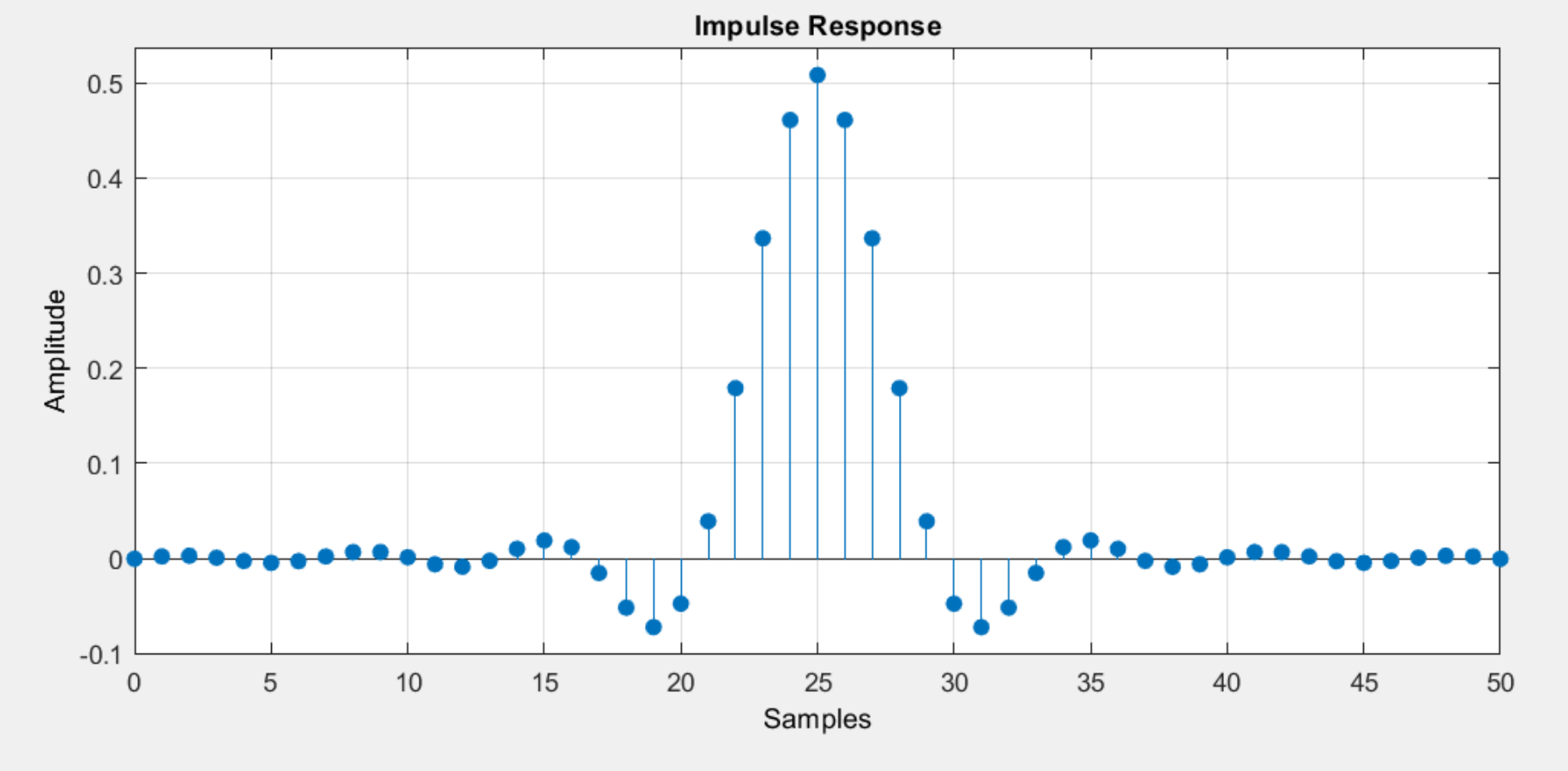


Modulação QPSK



RRC

Rolloff ajustável; Filter span in symb.=10; Samples per symb=5



Receptor

- Coarse Carrier Synch.
- RRC
- AGC
- TED
- Fine Carrier Synch.
- Filtro Casado
- Decodificador de Quadro

Coarse

```
function [out, peak_frequency]= fcn(in, fs, M)
length_signal = size(in, 1);
fft_signal = abs(fftshift(fft(in,
length_signal)));
frequencies = linspace(-fs/2, fs/2,
length_signal);
[value, peak_index] = max(fft_signal);
peak_frequency = frequencies(peak_index)/M;
out_vector = ones(length_signal, 1);
out = peak_frequency * out_vector;
```

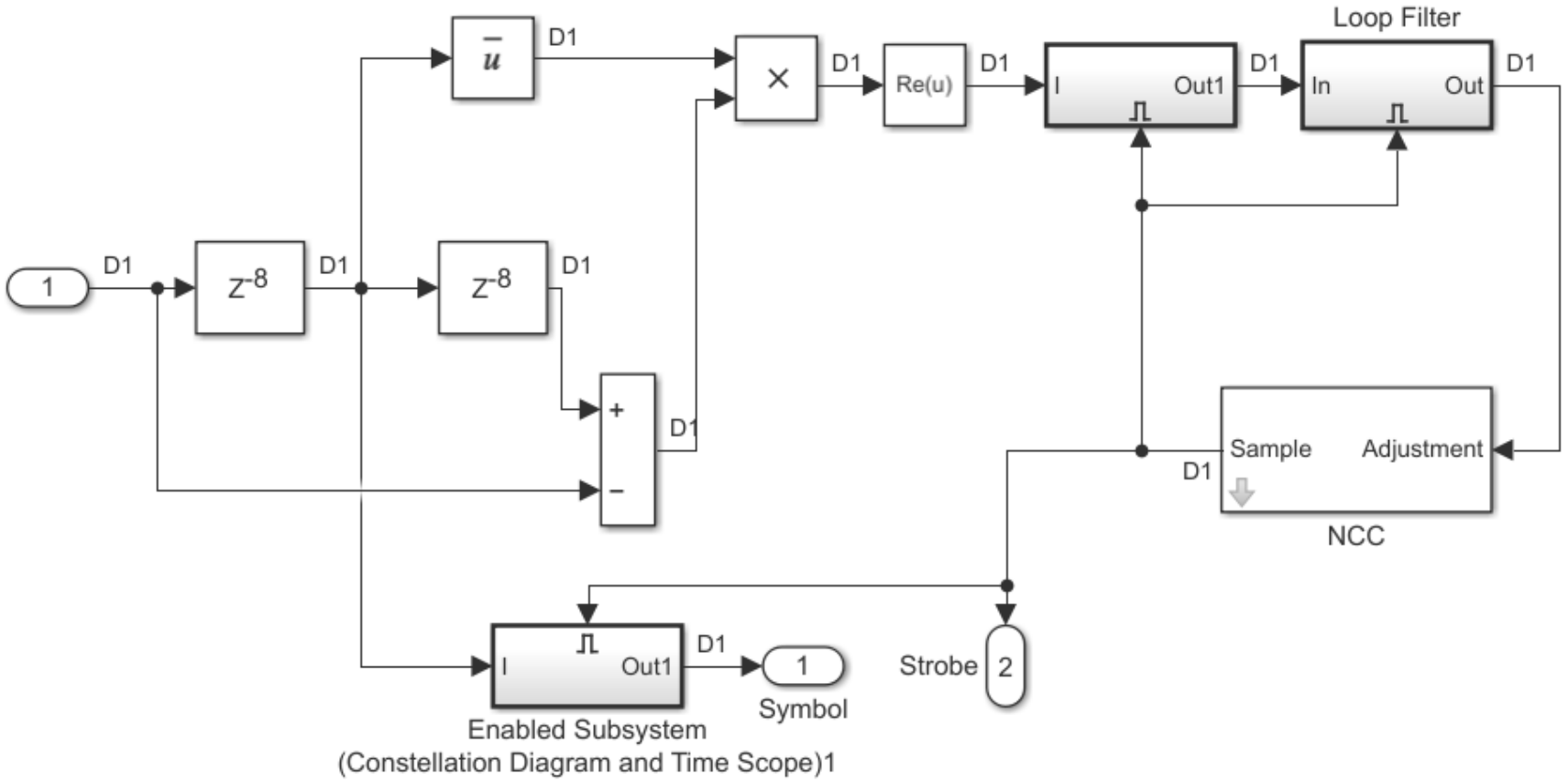
RRC

- Igual ao anterior, mas de recepção.

AGC

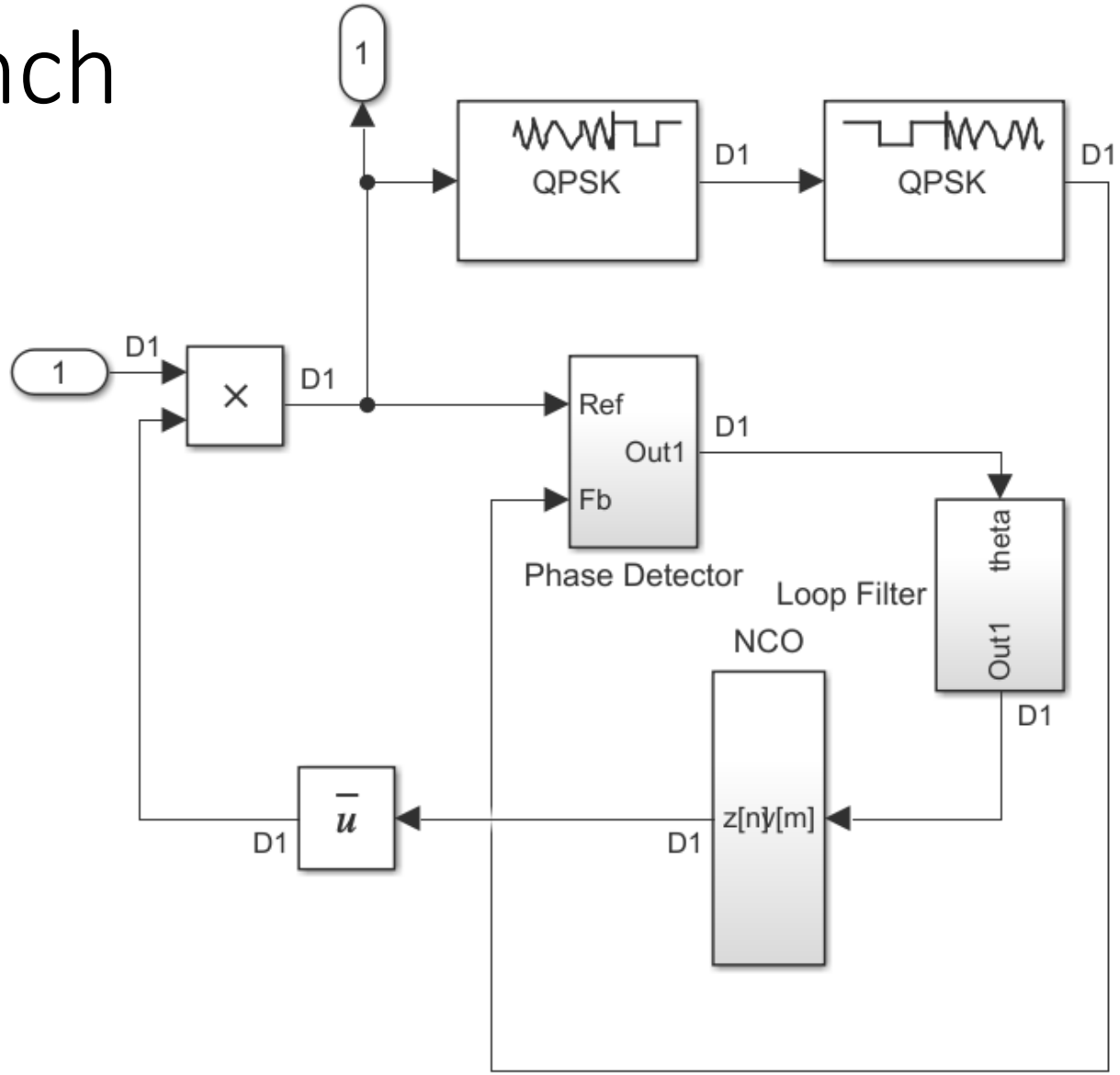
- Step size: 0.01
- Desired output power: 1W
- Averaging length: 100
- Maximum power gain: 60dB

TED



*TED para 10kbps

Fine Carrier Synch



Filtro Casado

Sequência Barker-13 duplicada duas vezes, sendo a primeira vez por intercalamento e a segunda por concatenação

```
bark=[3 3 3 3 3 0 0 3 3 0 3 0 3 3 3 2 1 2 2 3 3 3 0 3 1 1];
y = pskmod(bark,4,pi/4,'gray');
coef=flip(conj(y));
```

‘bark’ corresponde aos bits de cada símbolo da sequência especificada escritos em decimal!

Decodificador de Quadro