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Sistemas de Comunicaciones Digitales
03/11/20

1. Fs = 8000, B = 1000, Rb = 2000, D = 10. Determine el valor de β.

```
%% Exercise 1
Fs = 8000;
B = 1000;
Rb = 2000; Rs = Rb;
D = 10;
beta = (( 2*B ) / ( Rb )) - 1;
%beta = 0.2;
Tp = 1/Rb;
Ts = 1/Fs;
energy = 1;
mp = Fs / Rb;
%mp = Tp/Ts;

[BP,t] = rcpulse(beta, D, Tp, Ts, 'rc', energy);
```

Beta = 0;

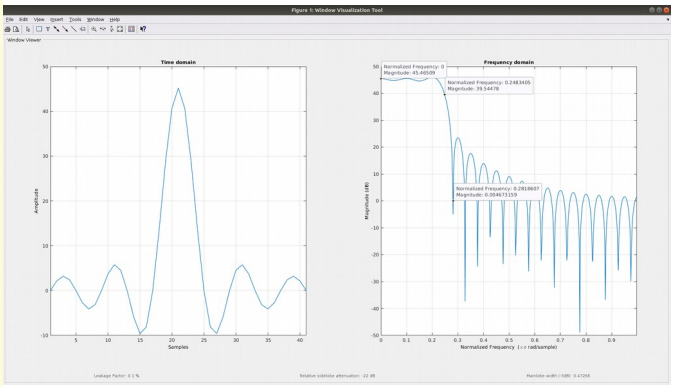

Illustration 1: Specter of the signal created via the code to the left

2. Fs = 8000, B = 1000, β = 0.2, D = 10. Determine el valor de Rb.

```
%% Exercise 2
Fs = 8000;
B = 1000;
beta = 0.2;
D = 10;
Rb = ( 2*B ) / ( 1 + beta );
Tp = 1/Rb;
Ts = 1/Fs;
mp = Fs / Rb;
%mp = Tp/Ts;

[BP,t] = rcpulse(beta, D, Tp, Ts, 'rc', energy);
```

Rb = 1.6 e+03;

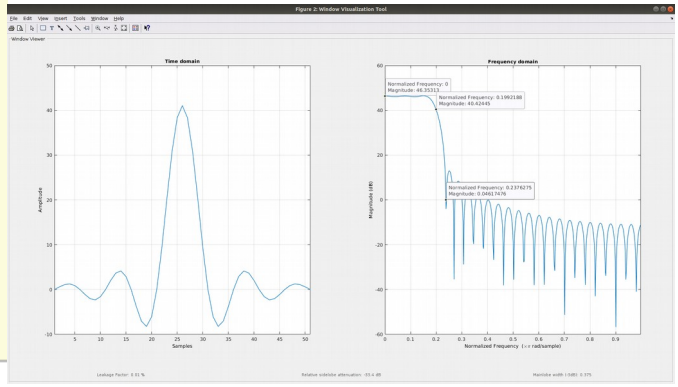

Illustration 2: Specter of the signal created via the code to the left

3. Fs = 4000, β = 0.8, Rb = 2000, D = 6.
Determine el valor de B.

```
%% Exercise 3
Fs = 4000;
B = 1000;
beta = 0.8;
D = 10;
Rb = 2000;
Tp = 1/Rb;
Ts = 1/Fs;
mp = Fs / Rb;
%mp = Tp/Ts;

B = (( 1 + beta ) * Rb) / 2;

[BP,t] = rcpulse(beta, D, Tp, Ts, 'rc', energy);
```

B = 1800;

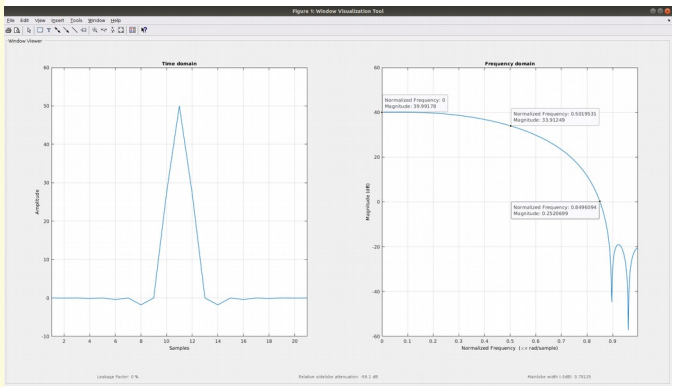

Illustration 3: Specter of the signal created via the code to the left

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Exercise 5.
1 & 2.

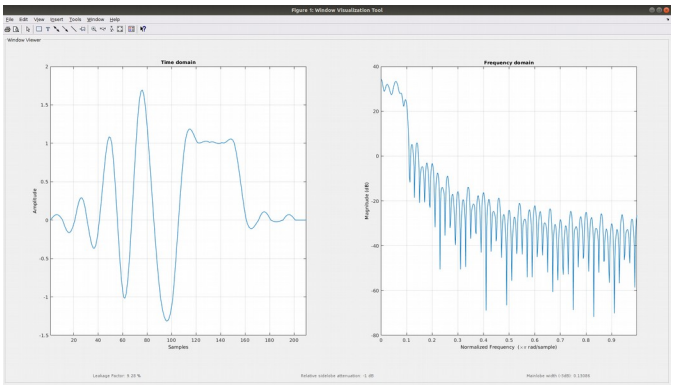

Illustration 4: Signal recreated via a train pulse

3.
The shown image is the first 100 pulses of the lena image sended via the new method saw in class.

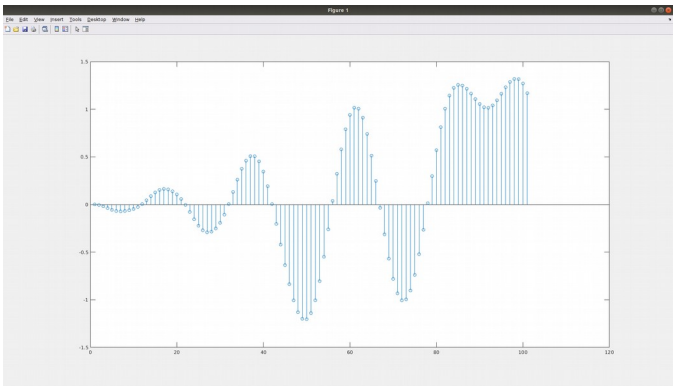

Illustration 5: First 100 samples of the lena transmition.

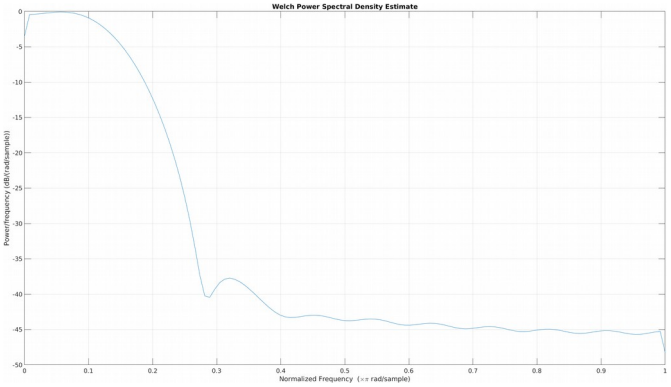

Illustration 6: Spectral Power Density of the first 100 samples.

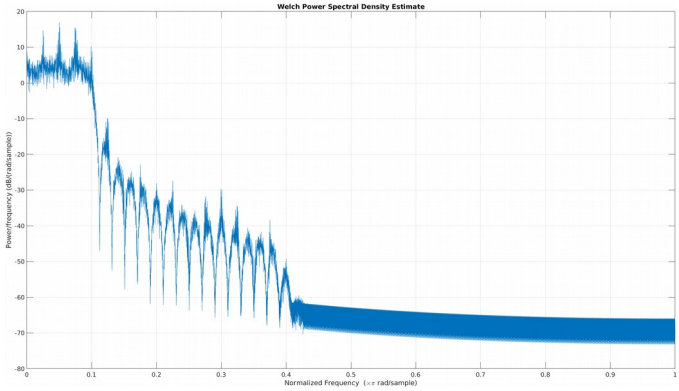

Illustration 7: Spectral Power Density of the hole signal.

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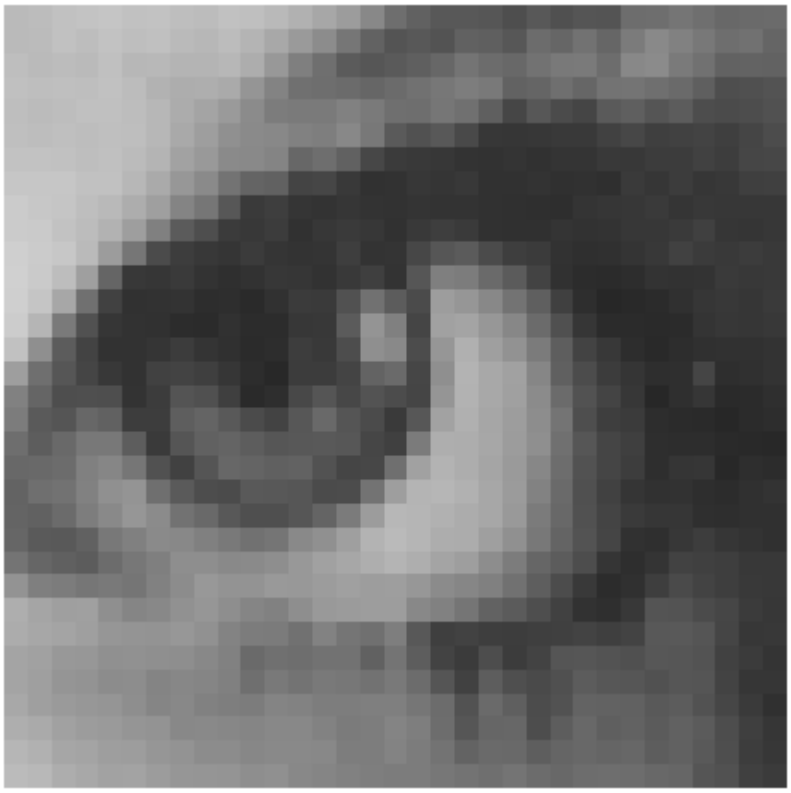

Illustration 8: Recovered image.

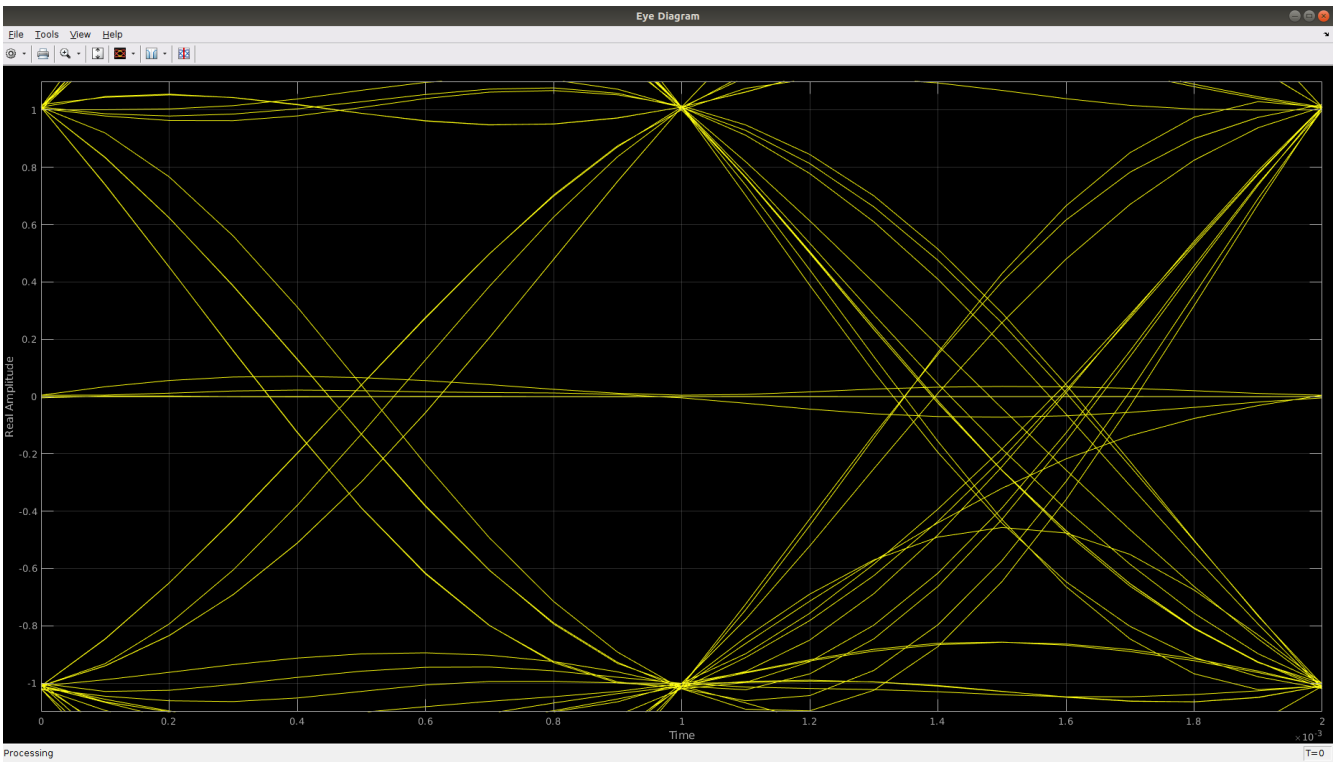

Illustration 9: Eye diagram of the signal via the Polar line code.