

Alexandria University
Faculty of Engineering
Electrical Engineering Department



Advanced Communications
Experiment 1
Direct sequence spread spectrum
(DSSS)

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Submitted to:

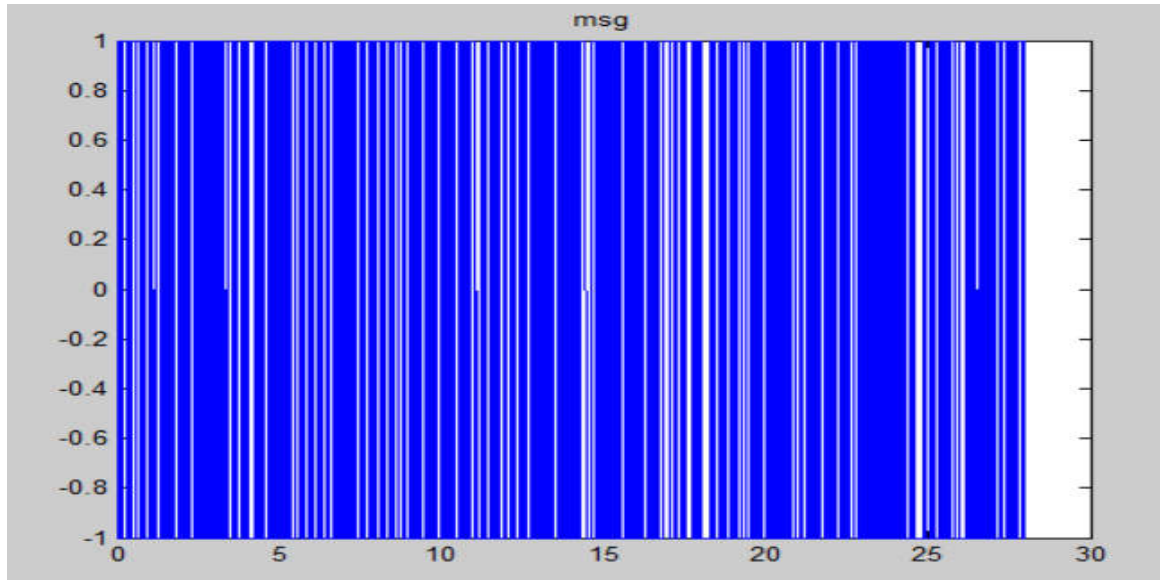
Dr. Saied El-Khamy

Eng. Hossam Hassan

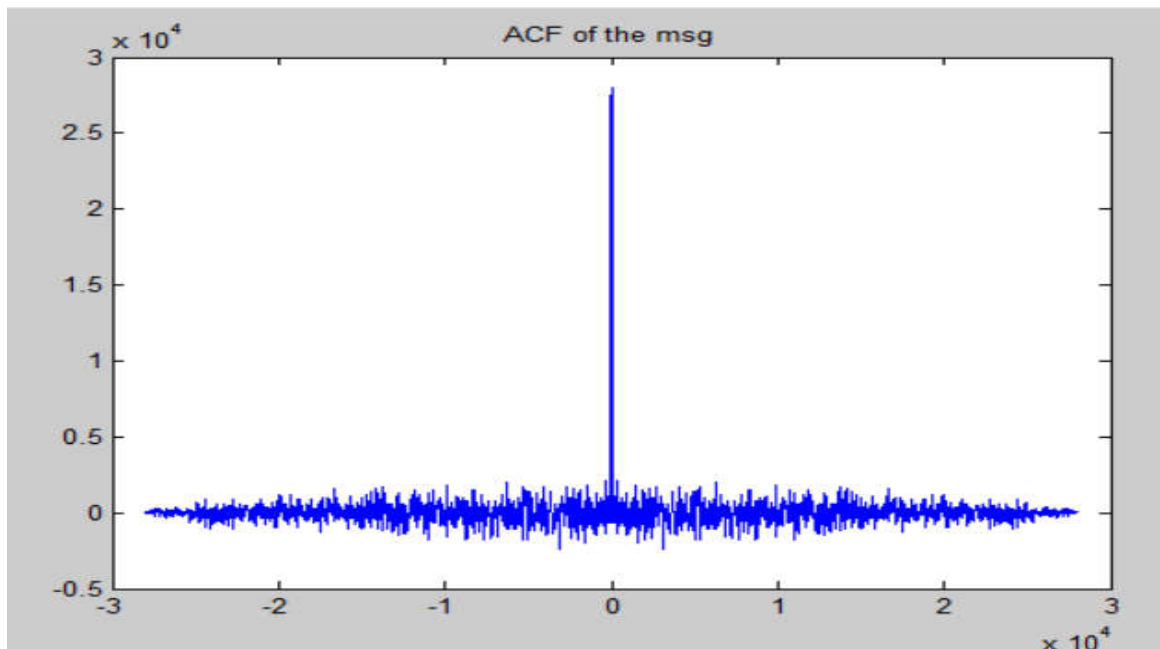
Eng. Remon Adly

Experiment 1
Direct sequence spread spectrum
(DSSS)

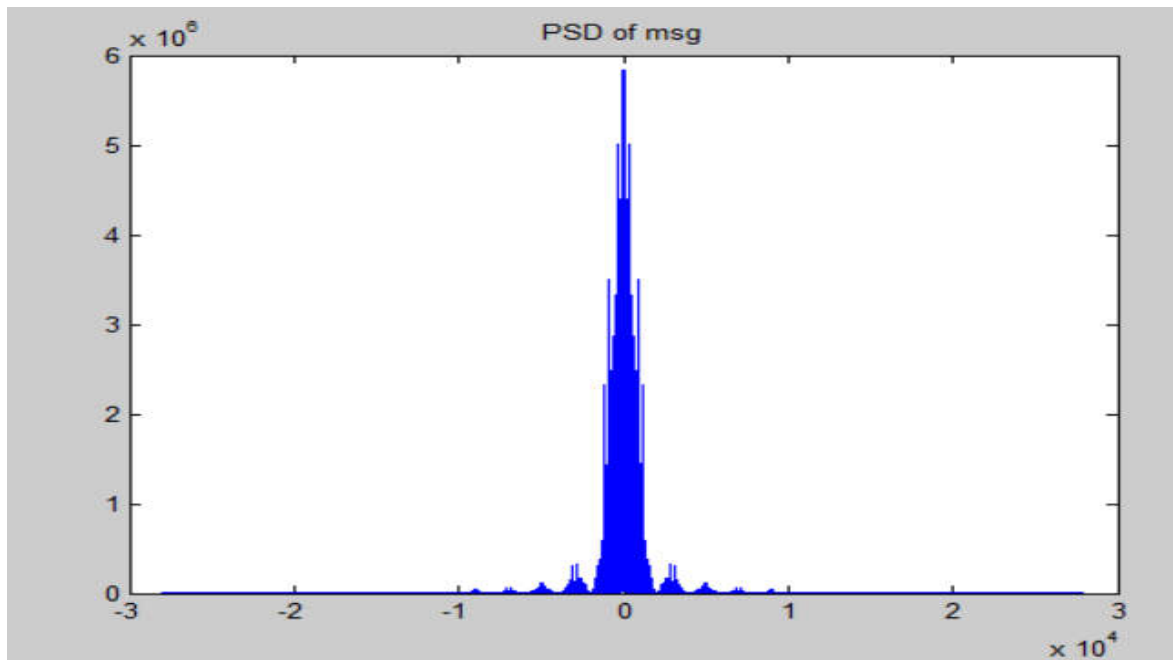
(1) Random Binary Sequence



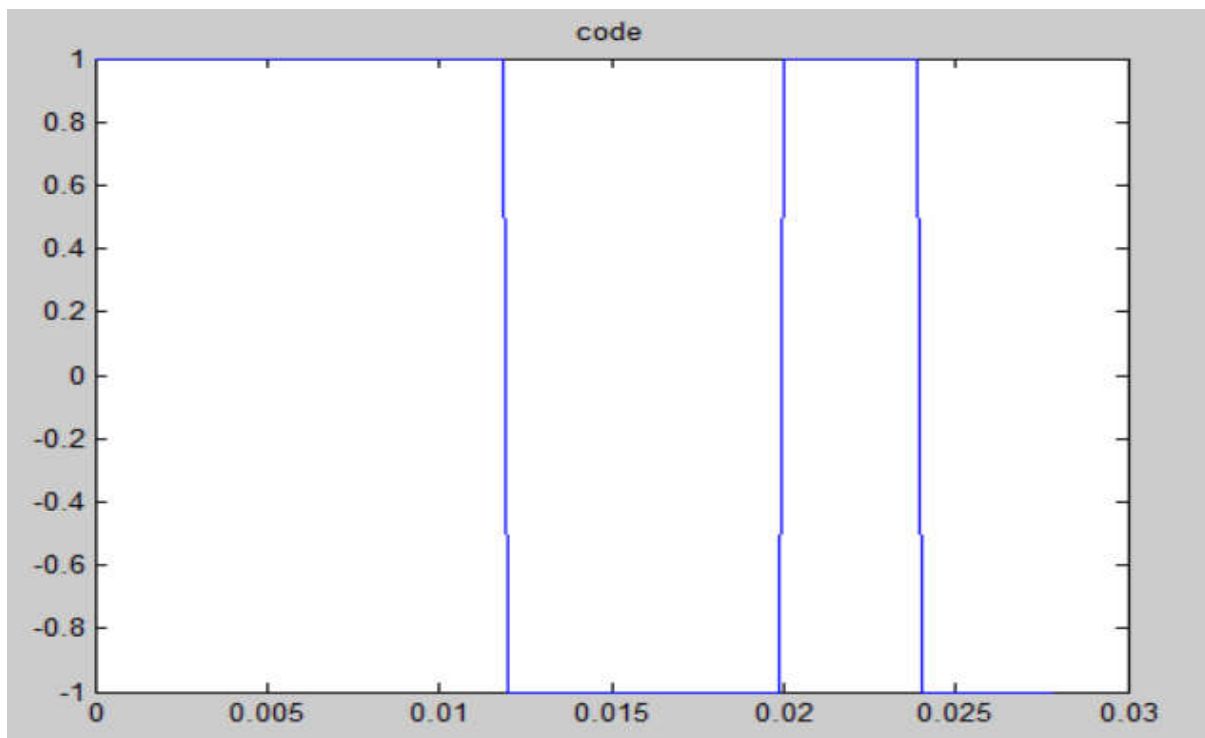
(2) Autocorrelation Function of the message



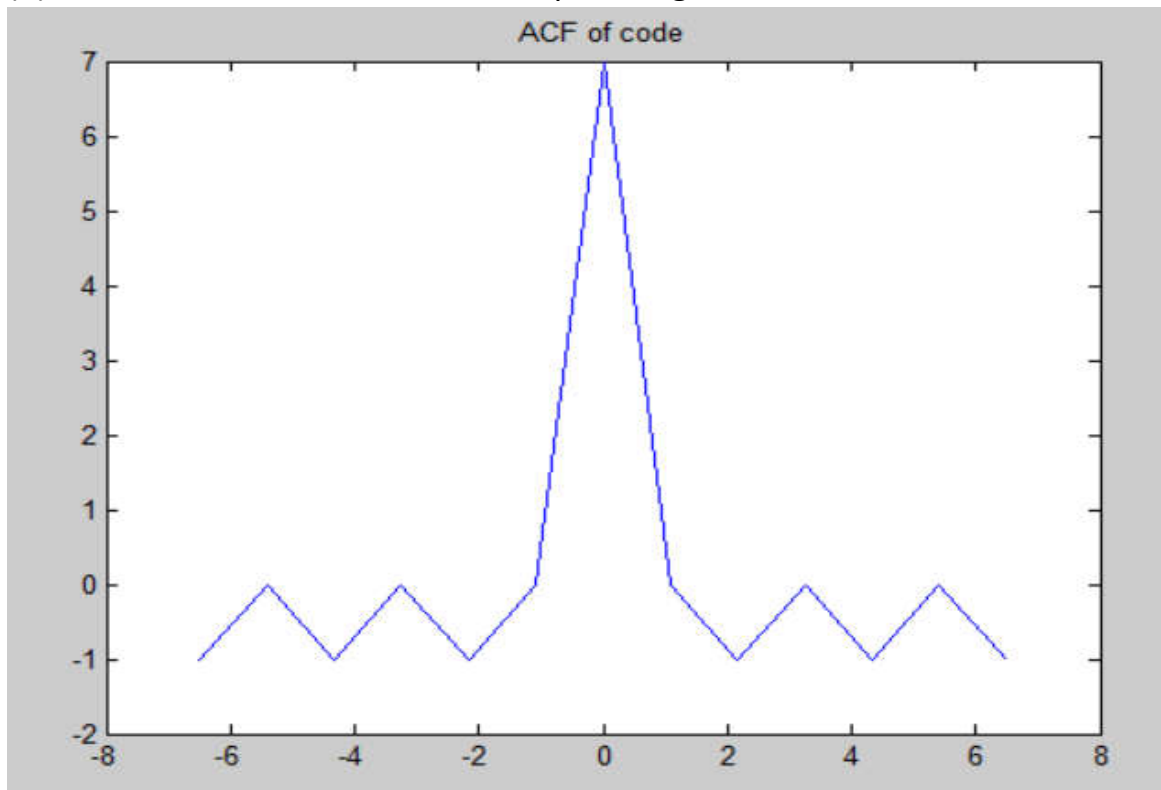
(3) Power spectral density



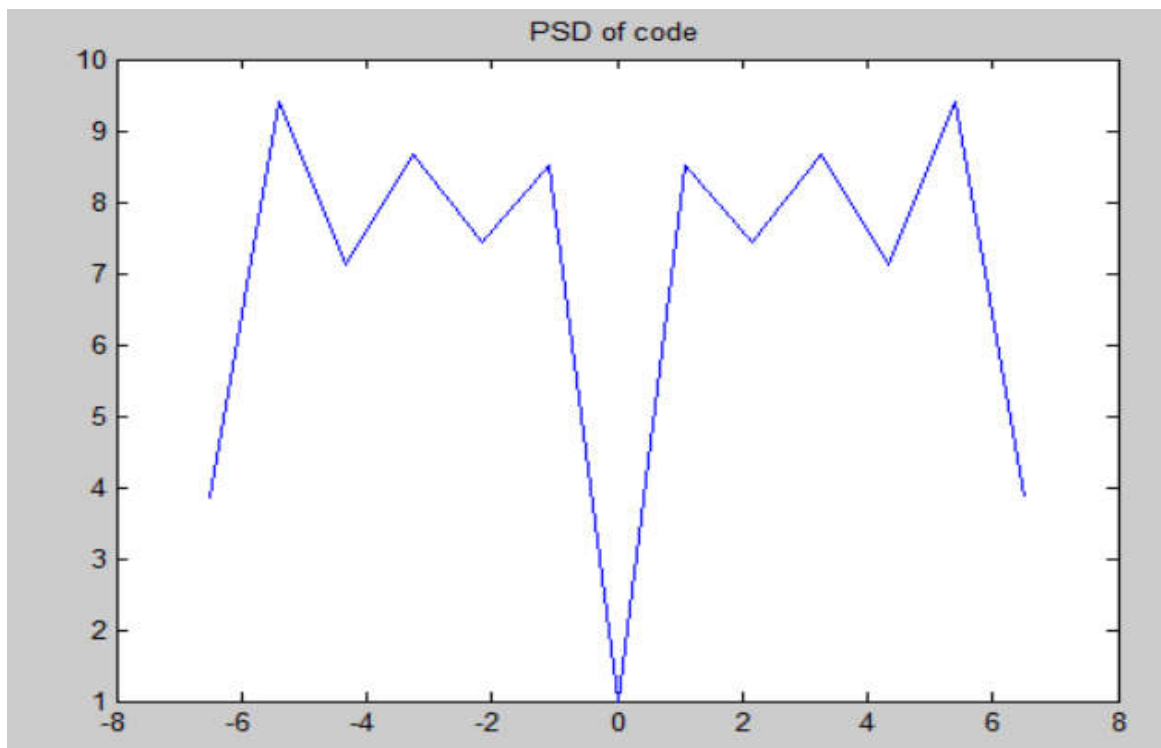
(4) Spreading code



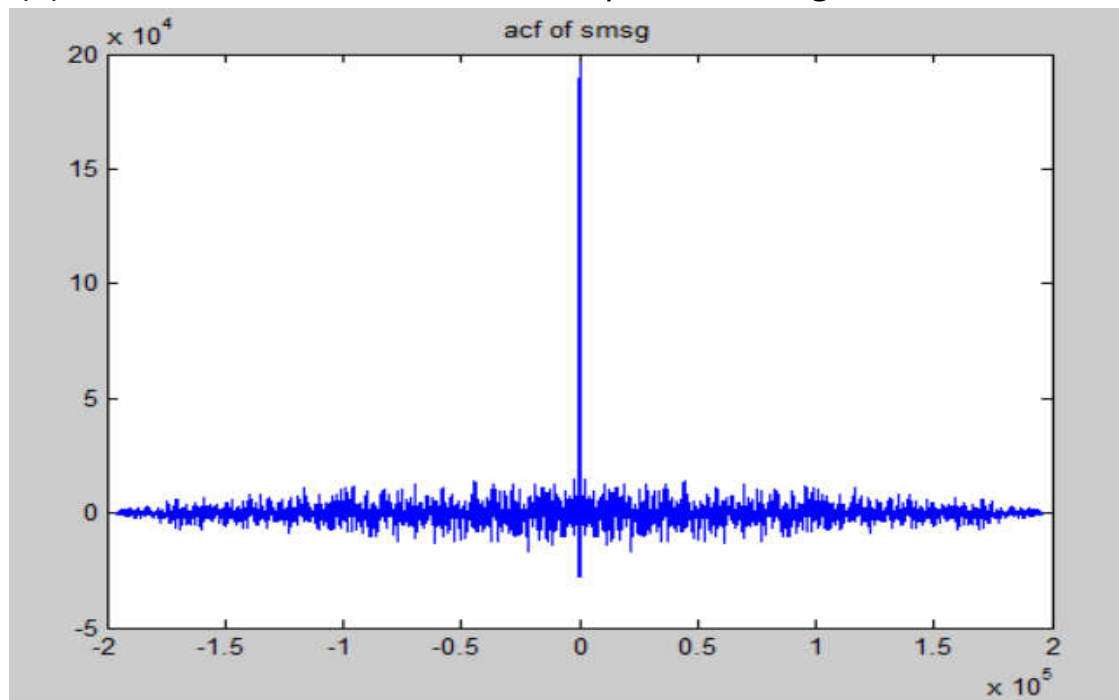
(5) Autocorrelation function of the spreading code



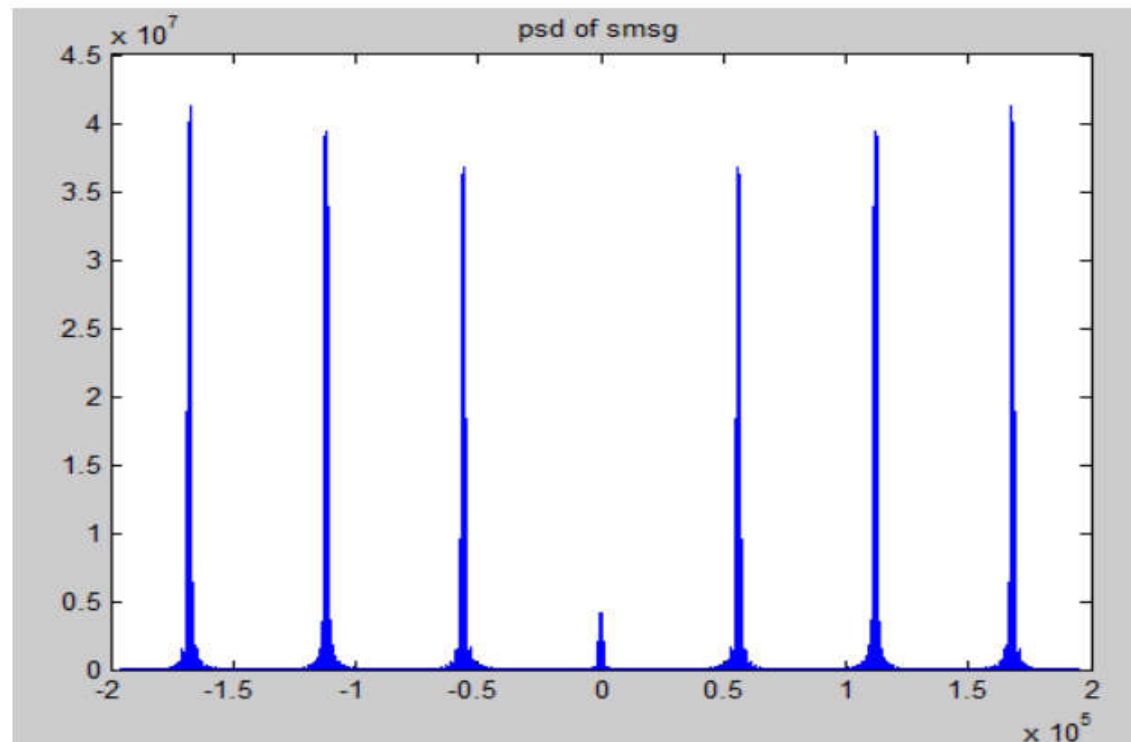
(6) Power spectral density of the code



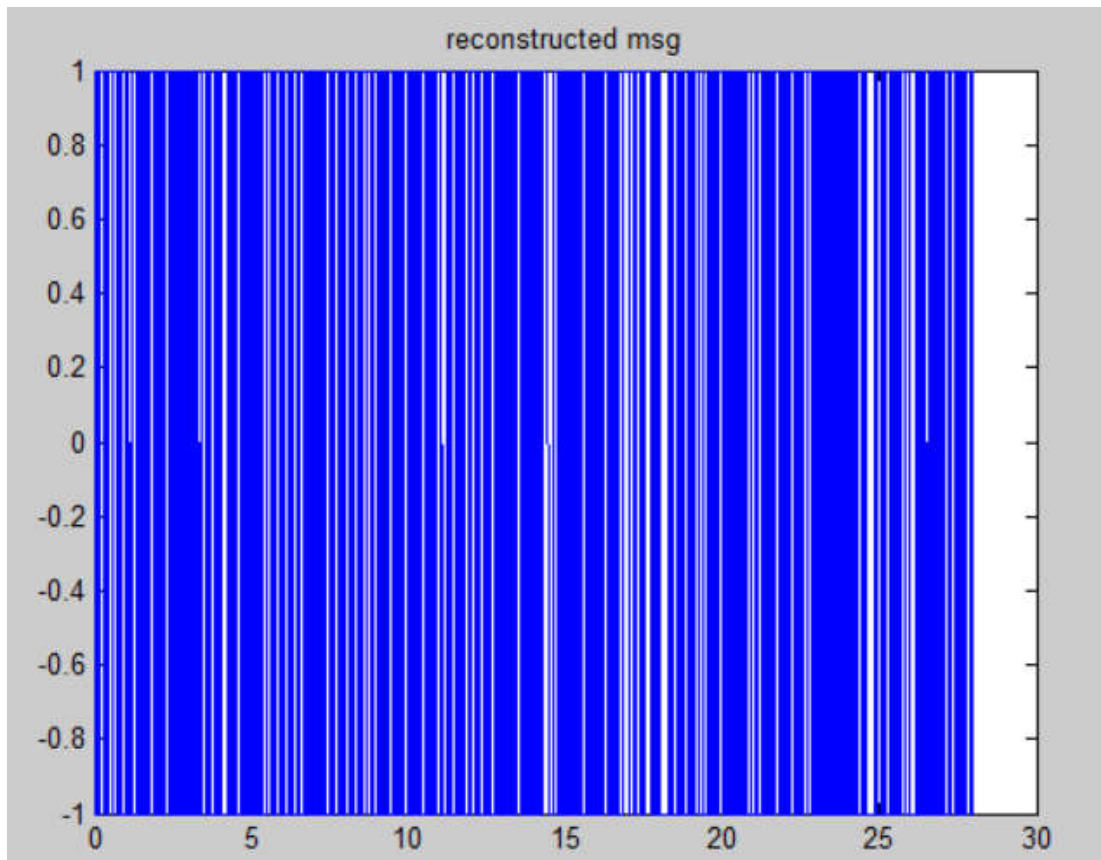
(7) Autocorrelation function of the spread message



(8) Power spectral density of the spread message



(9) Reconstructed message using de-spreading code



```
check=isequal(Rect_msg,dsmg)
```

```
check =
```

```
1
```

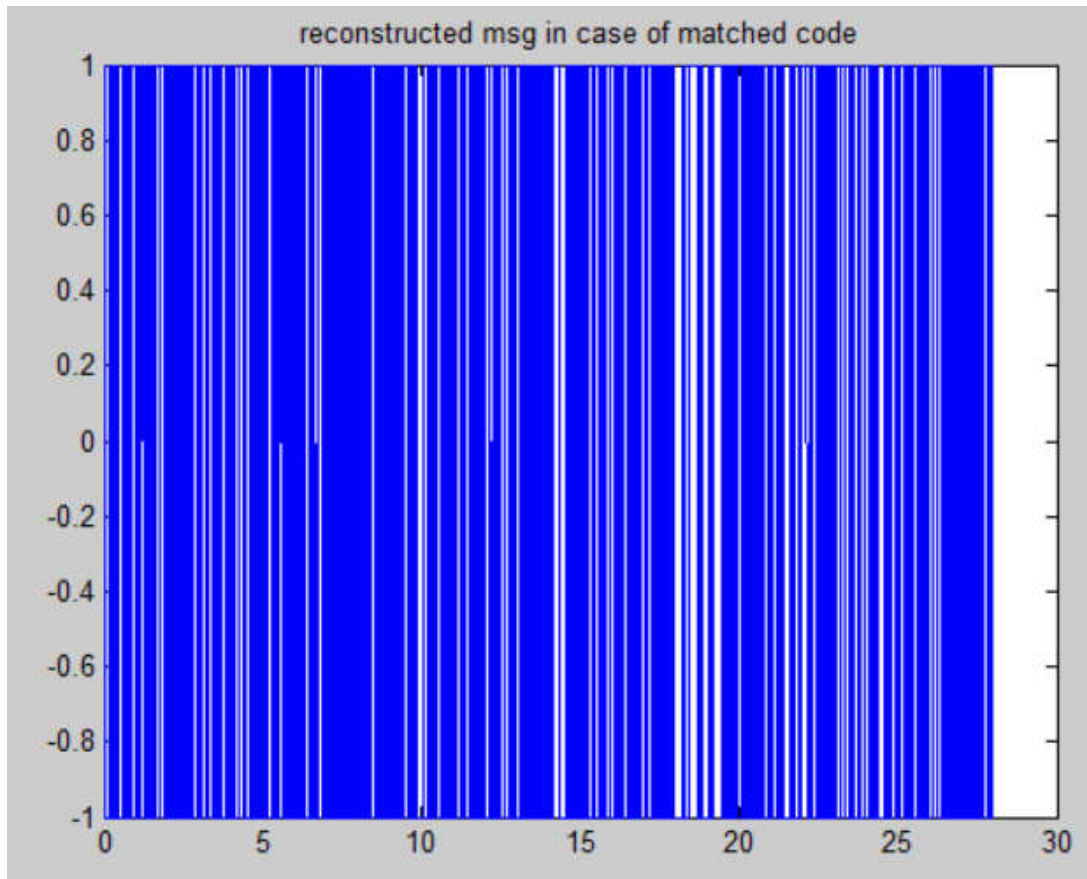
Processing gain

```
P_G=length(smsg)/length(Rect_msg)
```

```
P_G =
```

```
7
```

(10) Reconstructed Message using matched filter



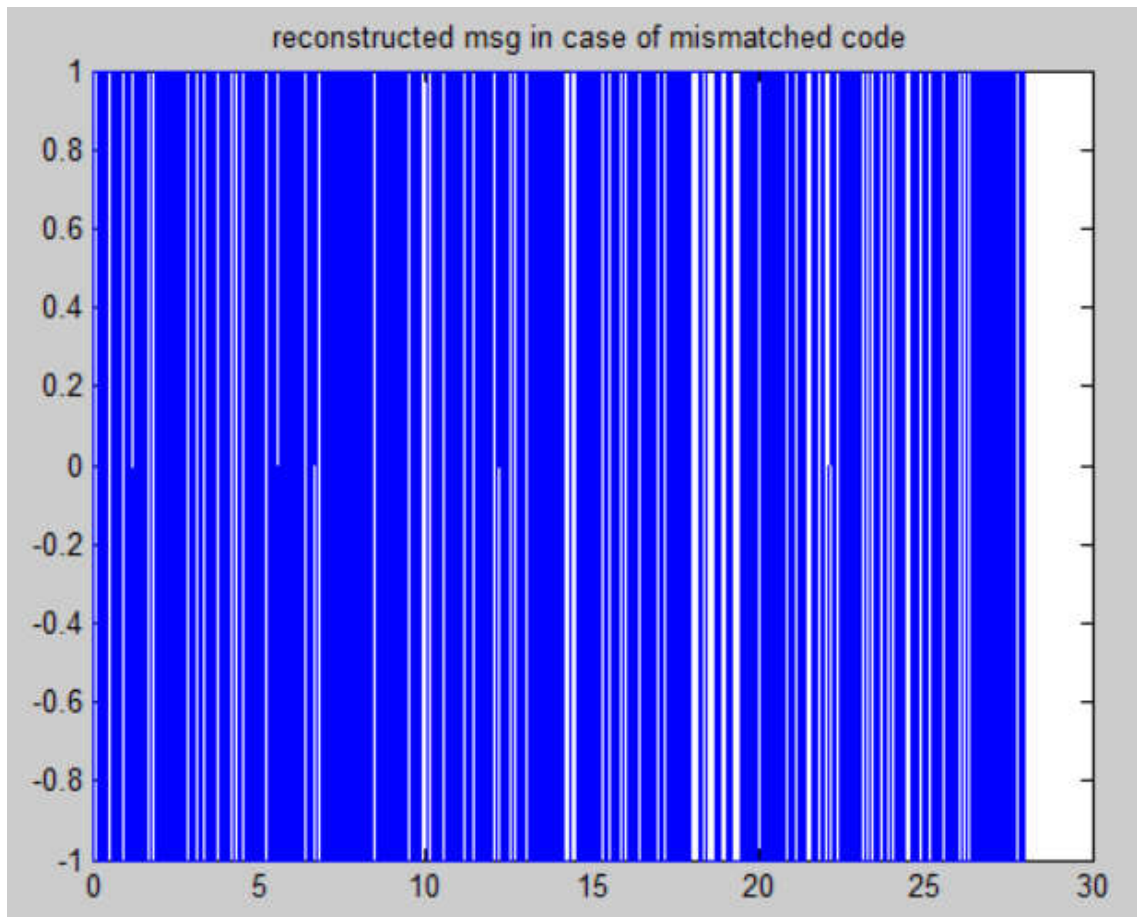
```
check_1= isequal(dsmsg,dsmsg_2)
```

```
check_1 =
```

```
1
```

Using the same code as spreading in despreading will produce the same generated random sequence

11) De-spreading using mismatched code



```
check_2= isequal(dsmsg,dsmsg_3)
```

```
check_2 =
```

```
0
```

The message can't be reconstructed as when the message is convoluted with a mismatched code it will produce a completely different random sequence