程式碼

num\_bit = 10;

bit = rand(1, num\_bit);

bit\_4out5in = round(bit) #四捨五入

plot(bit\_4out5in)

wave\_bit = bit\_4out5in'\*ones(1, 100) #轉至完，生成每列100個相同數字

wave\_bit\_wave = reshape(wave\_bit', 1, 1000) ; #10\*100轉至完，改成一列1000個數字

%wave\_bit\_wave = reshape(wave\_bit', 1, 1000) + rand(1,1000,2); #10\*100轉至完，改成一列1000個數字，加雜訊

t = 10^-3:10^-3:1; #開始：間隔：結尾

figure(2);

plot(t, wave\_bit\_wave); #發射端

ylim([-0.5 2.5]);

inv\_bit = abs(wave\_bit\_wave-1);

%%%%%%%%%

%carriers

f1 = 10; f2 = 5;

cal1 = cos(2\*pi\*f1\*t);

cal2 = cos(2\*pi\*f2\*t);

figure(3);

subplot(2,1,1);

plot(t, cal1);

subplot(2,1,2);

plot(t, cal2);

%%%%%%%%%

%fsk\_wave

fsk\_wave = cal1.\*wave\_bit\_wave + cal2.\*inv\_bit

figure(4);

subplot(2,1,1);

plot(t, wave\_bit\_wave);

ylim([-0.5 1.5]);

subplot(2,1,2);

plot(t, fsk\_wave);

%%%%%%%%%%%%%%%%%%

%demondulation FSK

ca1\_rx = cos(2\*pi\*f1\*1.022444\*t);

ca2\_rx = cos(2\*pi\*f2\*1.022444\*t);

rxf1 = fsk\_wave.\*ca1\_rx;

rxf2 = fsk\_wave.\*ca2\_rx;

figure(5);

subplot(2,1,1);

plot(t, rxf1);

subplot(2,1,2);

plot(t, rxf2);

rx\_2nd = rxf1 - rxf2;

figure(6);

subplot(2,1,1);

plot(t, wave\_bit\_wave);

ylim([-0.5 1.5]);

subplot(2,1,2);

plot(t, rx\_2nd);

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

total\_arr\_rxf1 = 1:10;

value\_onehundred = 0;

j = 1;

for i = 1:1000

if(rem(i, 100) != 0)

value\_onehundred = value\_onehundred + rxf1(i);

else

total\_arr\_rxf1(j) = value\_onehundred + rxf1(i);

value\_onehundred = 0;

j = j+1;

end

end

total\_arr\_rxf2 = 1:10;

value\_onehundredd = 0;

j = 1;

for i = 1:10

rxf1\_int(i) = sum(rxf1((i-1)\*100+1:i\*100),2);

rxf2\_int(i) = sum(rxf2((i-1)\*100+1:i\*100),2);

end

figure(7);

subplot(2,1,1);

plot(rxf1\_int);

subplot(2,1,2);

plot(rxf2\_int);

figure(8);

subplot(2,1,1);

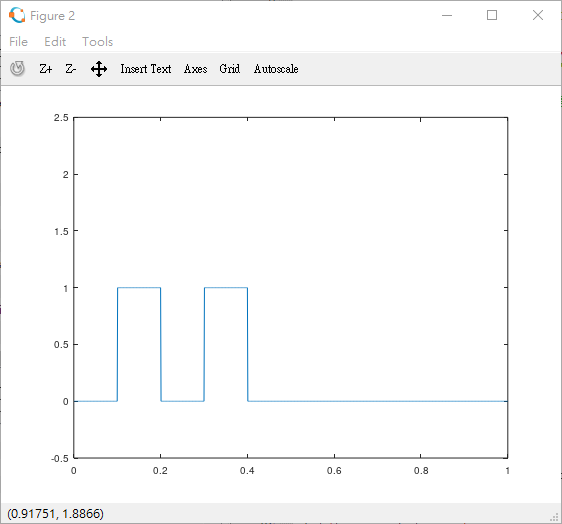
plot(rx\_bit);

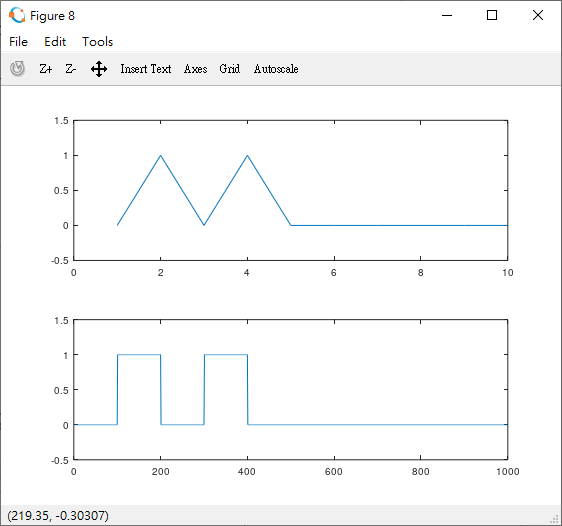
ylim([-0.5 1.5]);

subplot(2,1,2);

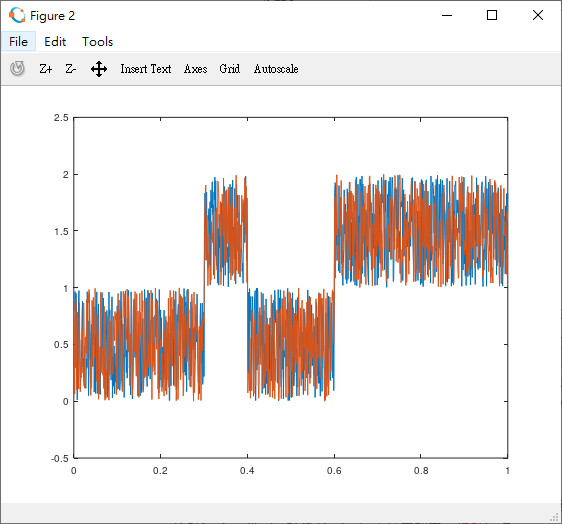
plot(rx\_bit\_wave); #接受端，圖2會和圖8一樣

ylim([-0.5 1.5]);

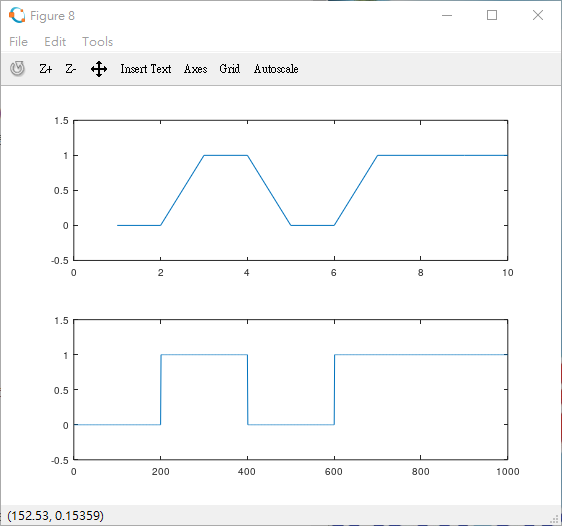




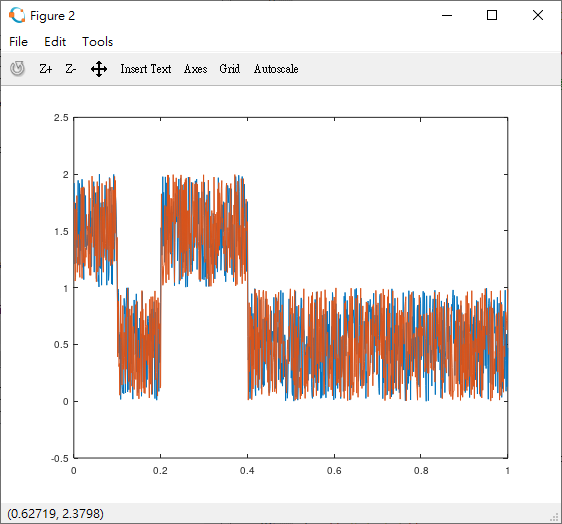
接收端與發射端(下面圖)相同。



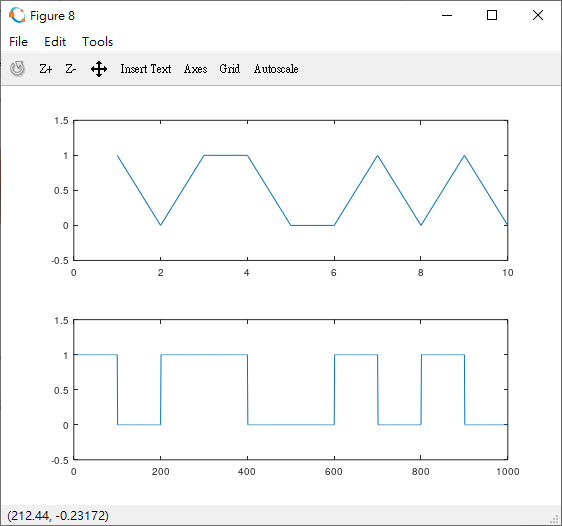
接收端加入雜訊。



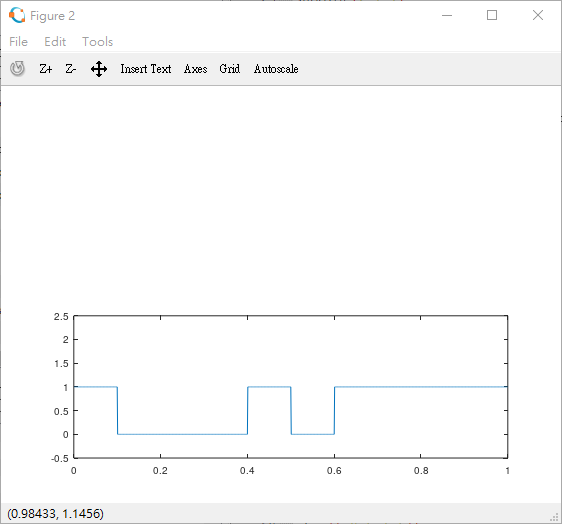
接收端與發射端(下面圖)同位元。

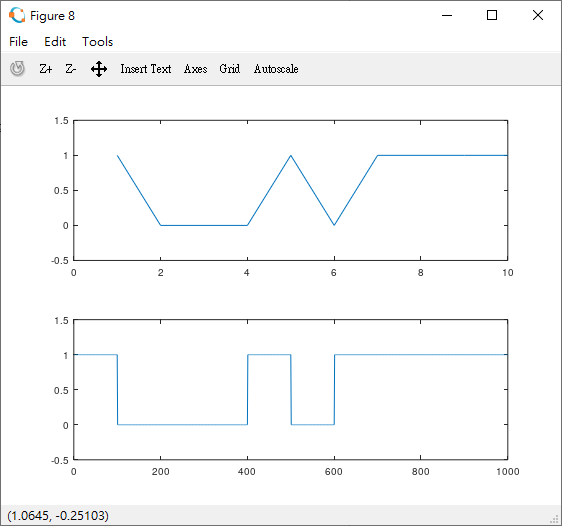


接收端加入雜訊。



接收端與發射端(下面圖)非同位元。





ca1\_rx = cos(2\*pi\*f1\*1.022444\*t);

ca2\_rx = cos(2\*pi\*f2\*1.022444\*t);

rxf1 = fsk\_wave.\*ca1\_rx;

rxf2 = fsk\_wave.\*ca2\_rx;

偏移量0.2244…..4都還能夠承受

發射端跟接收端一樣