

```

clc
clear all
close all
k=2*pi;
N=4;%no of array element
d=0.5;% the pace between the array element in lamda
the_m=pi/3;%
delta= -k*d*cos(the_m);% 0 for broadside and -k*d*(-pi) or +k*d(+pi) for end off fire and (any angle(pi/2)
for phased array
theta=0:pi/120:2*pi;
epsi=k*d*cos(theta)+delta;
for i=1:length(theta)
    AA(i)=sin(N*epsi(i)/2);
    BB(i)=N*sin(epsi(i)/2);
AF(i)=abs(AA(i)/BB(i));
end

a=abs(AF/max(AF));
figure
polar(theta,a,'r')
title('radiation pattern of ARRAY Factor')
figure
plot(theta.*180/pi,a,'r')
title('radiation pattern of ARRAY Factor')
grid on

for s=1:5;
the_s(s)=acos(1-((2*s+1)/(2*N*d)))
end

```