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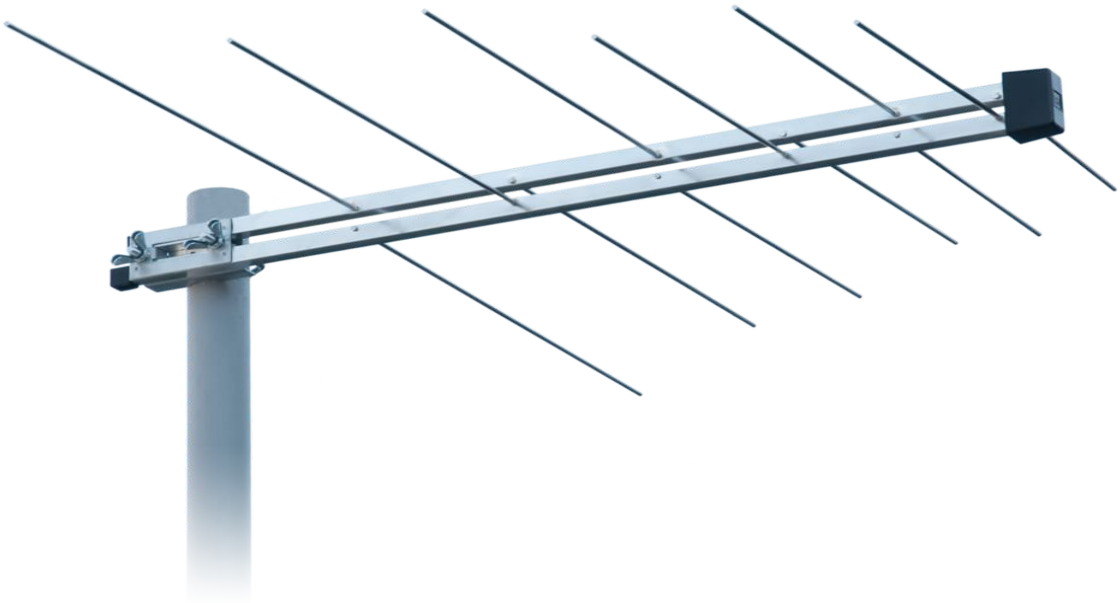
To Prof Dr: Said El-Khamy



Antenna

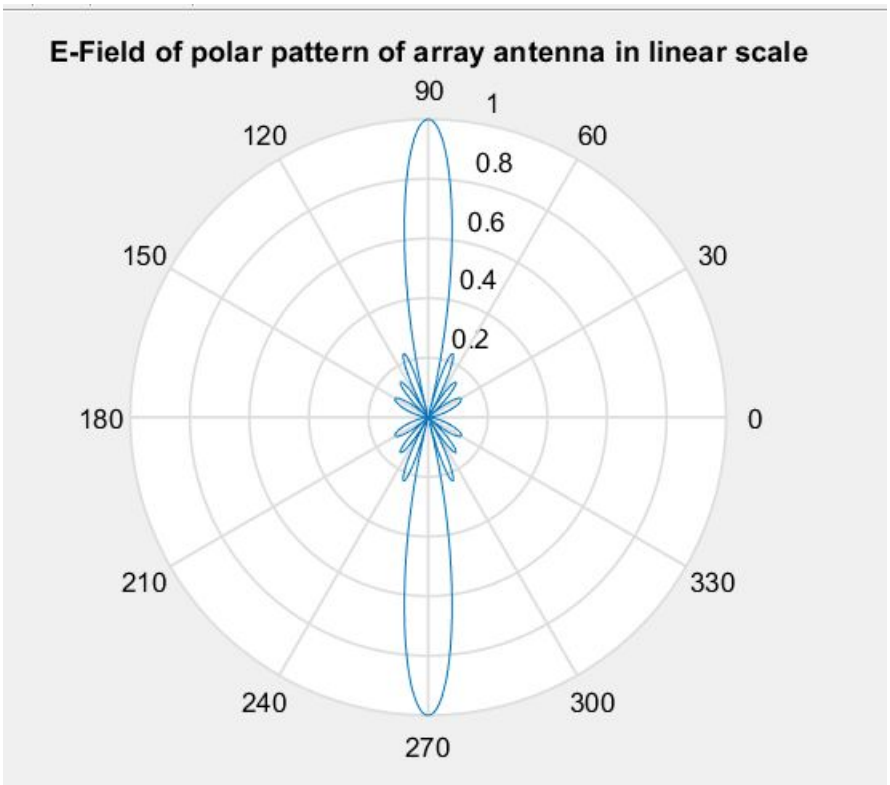
Code :

For broadside Antenna

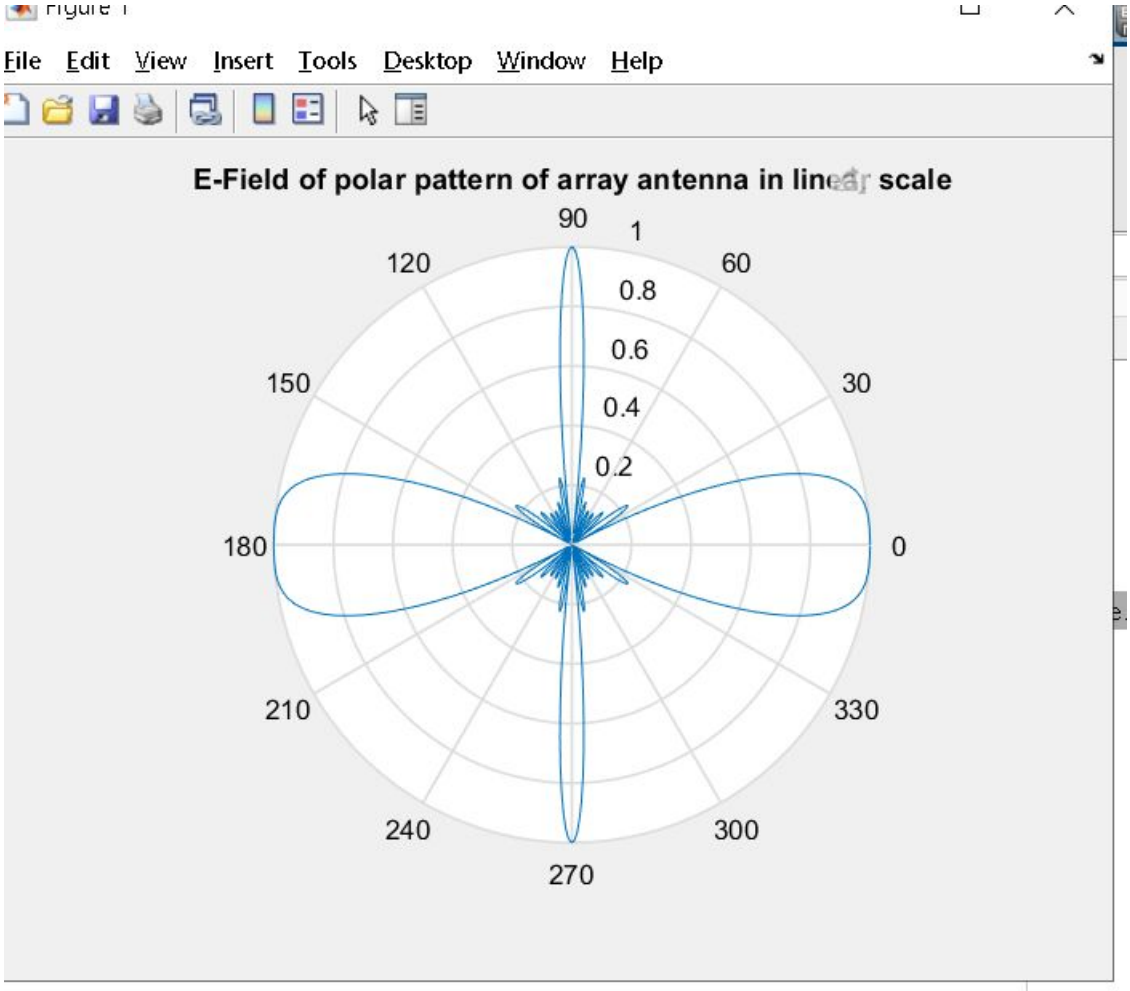
```
%Number of elements in array
N=8 ;
% input distance w.r.t wavelength
dis_div_wavelength=input('Enter the distance between elements divided
by the wavelength ');
% angle
Theta=0:0.01:2*pi ;
Epsi=2*pi*(dis_div_wavelength)*cos(Theta) ;
x1=(N/2).*(Epsi);
x2=(1/2)*(Epsi);
AF=sin(x1)./(N*sin(x2));
G=abs(AF);
polar(Theta,G);
title('E-Field of polar pattern of array antenna in linear scale');
```

Output:

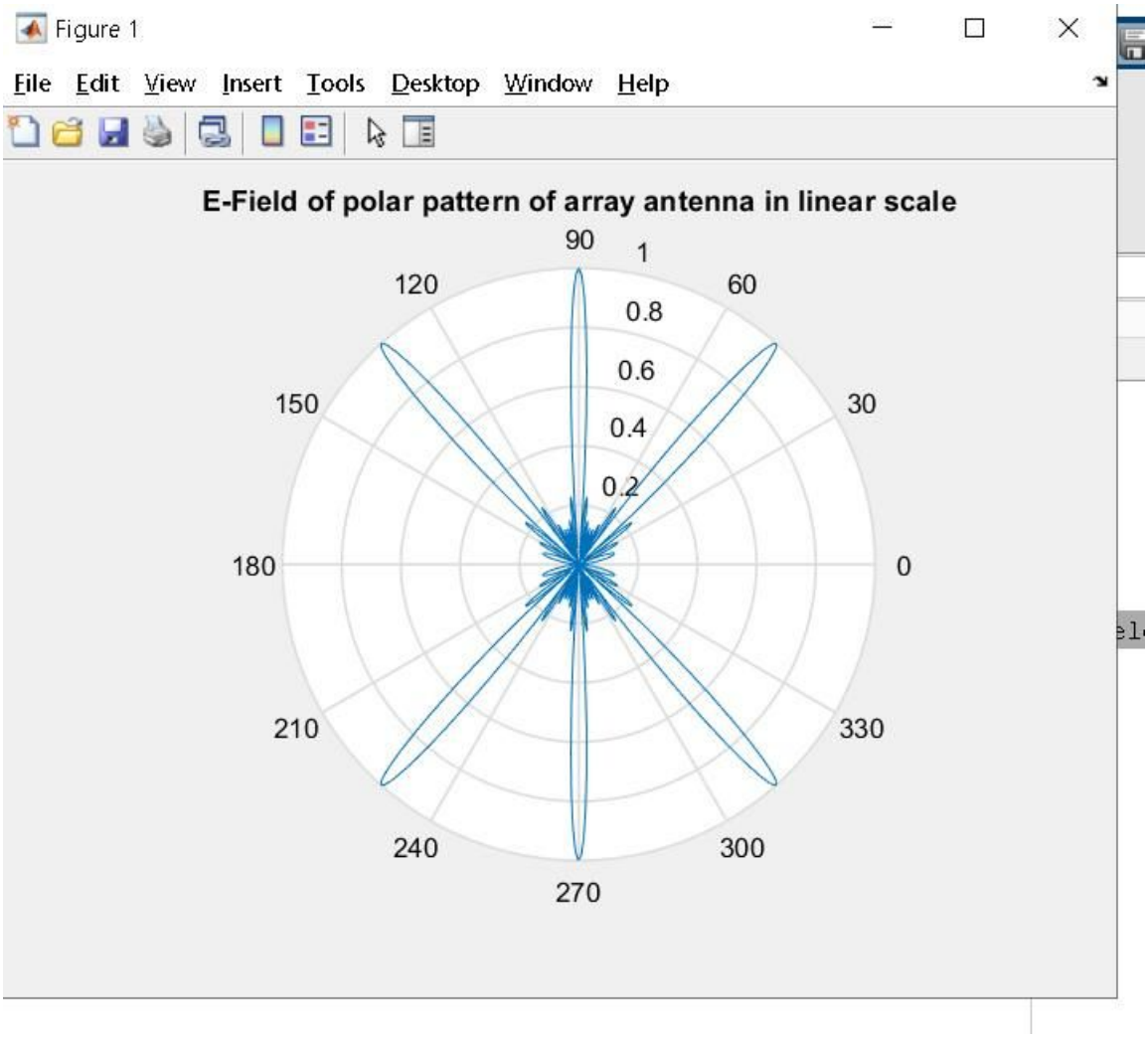
```
>> Untitled
Enter the distance between elements divided by the wavelength 0.5
>>
```



```
Enter the distance between elements divided by the wavelength 1
>>
```



```
Enter the distance between elements divided by the wavelength 1.5
```

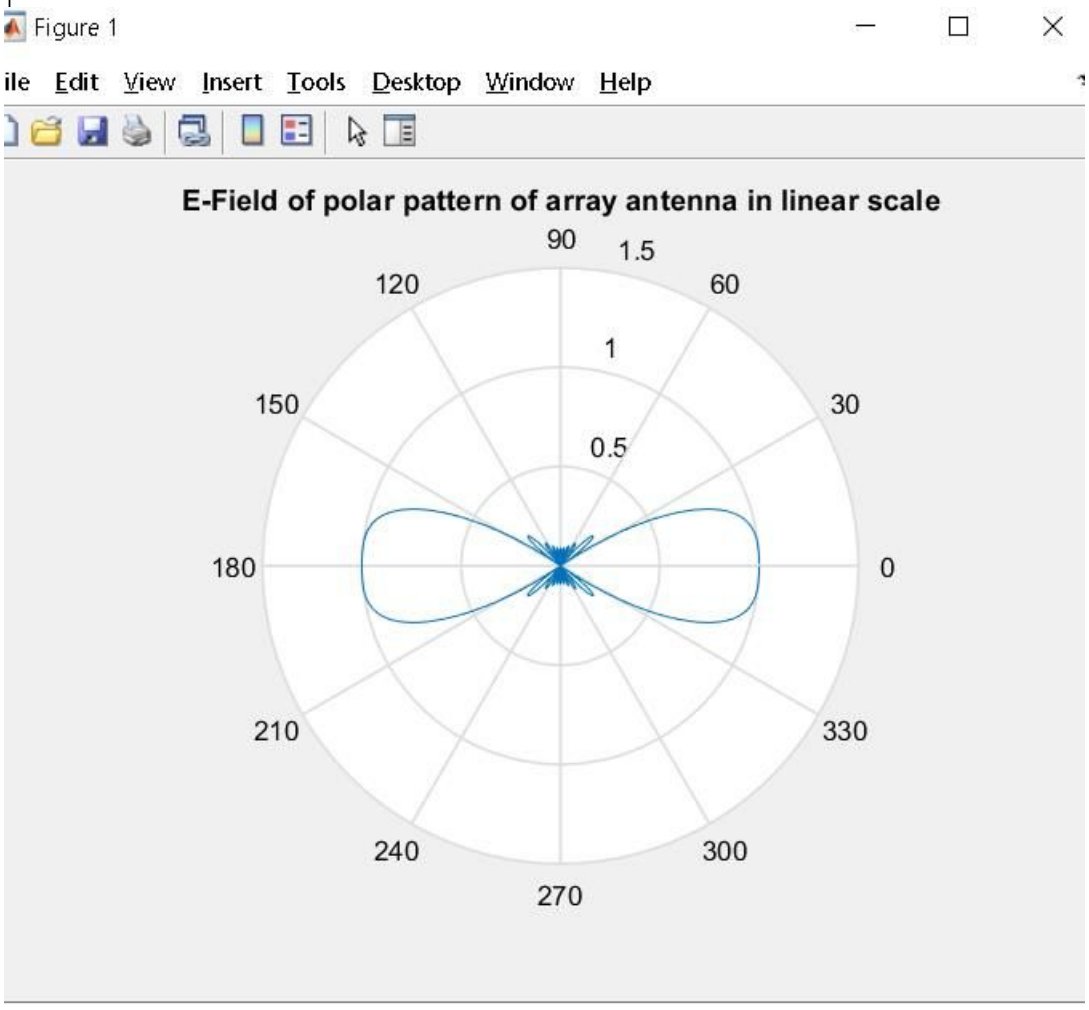


Code:

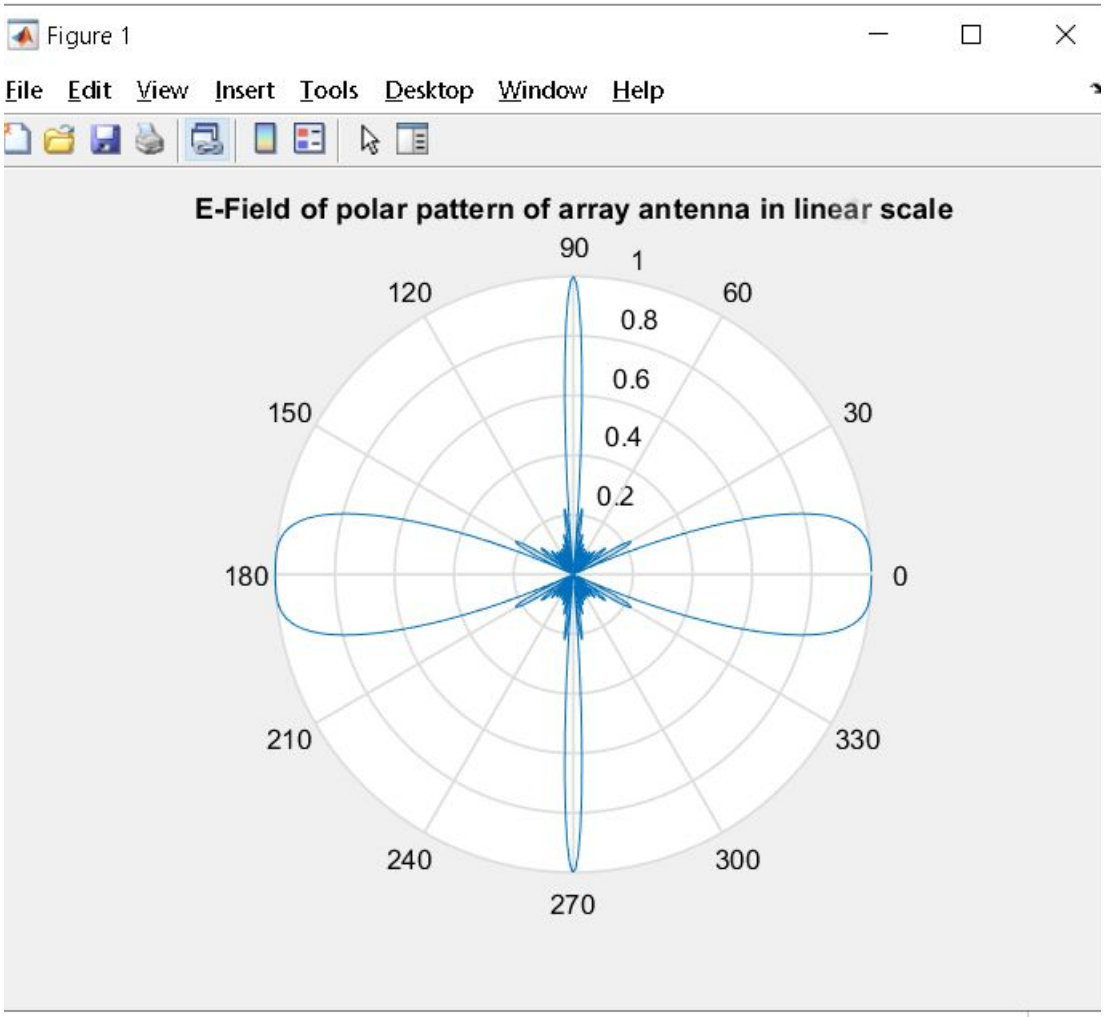
```
N=11 ;
% input distance w.r.t wavelength
dis_div_wavelength=input('Enter the distance between elements divided
by the wavelength ');
% angle
Theta=0:0.01:2*pi ;
alpha=-2*pi*dis_div_wavelength;
Epsi=alpha+2*pi*(dis_div_wavelength)*cos(Theta) ;
x1=(N/2).*(Epsi);
x2=(1/2)*(Epsi);
AF=sin(x1)./(N*sin(x2));
G=abs(AF);
polar(Theta,G);
title('E-Field of polar pattern of array antenna in linear scale');
```

EndFire antenna :

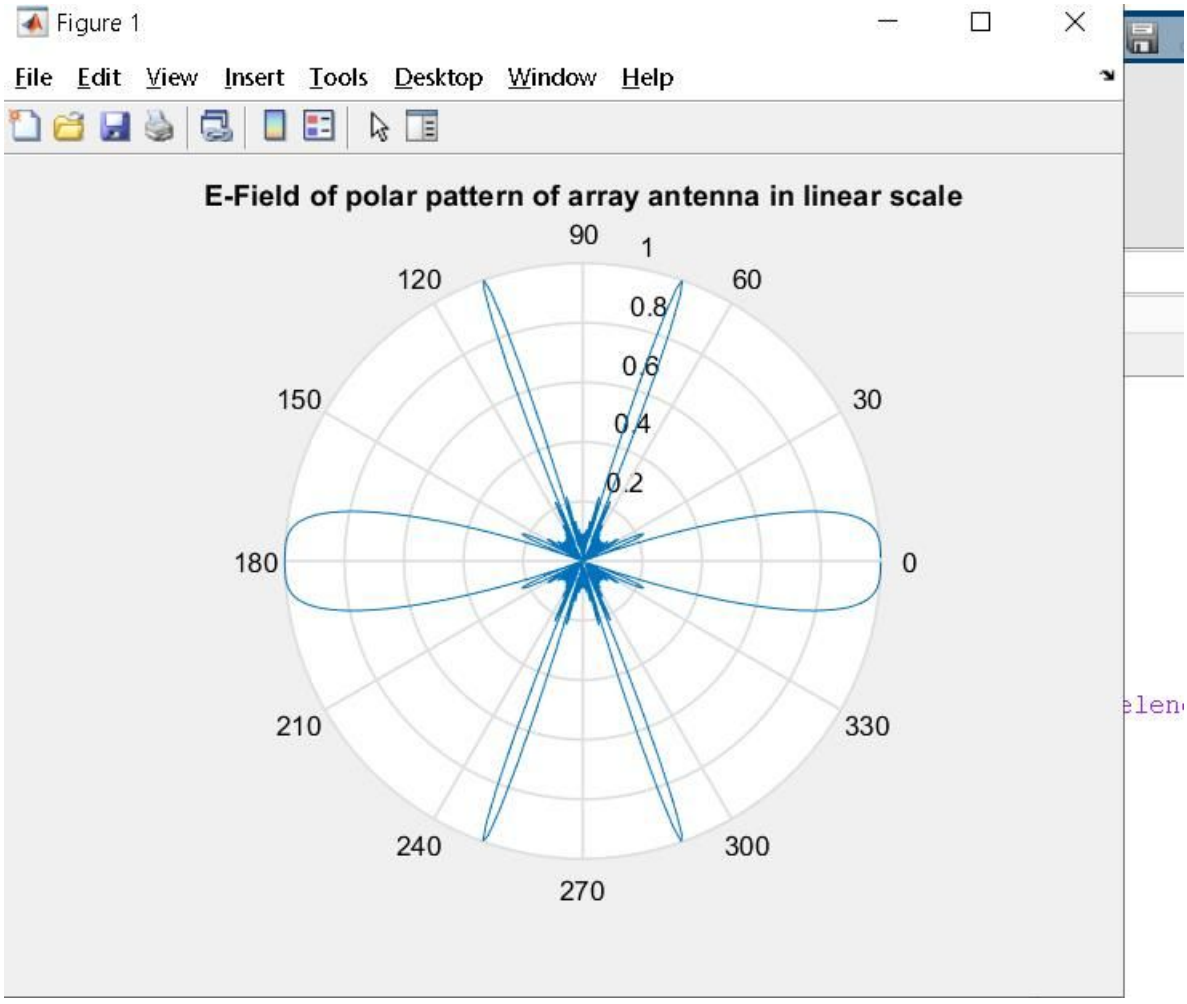
```
>> Untitled
Enter the distance between elements divided by the wavelength 0.5
>>
```



```
Enter the distance between elements divided by the wavelength 1
>>
```



```
Enter the distance between elements divided by the wavelength 1.5
```



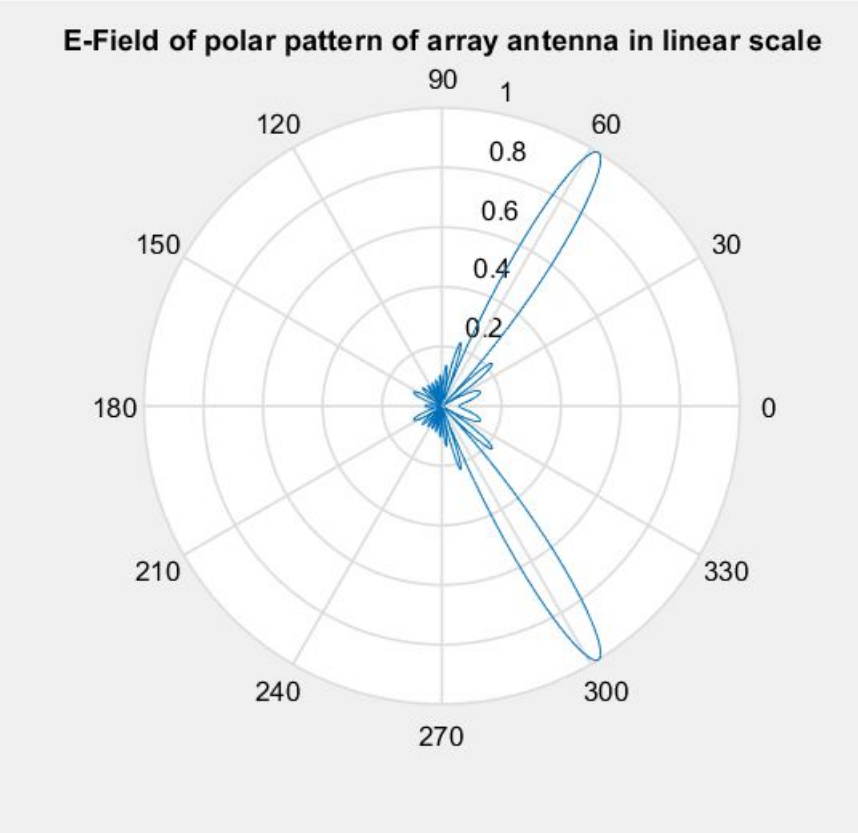
Code:

Electronic Scanning:

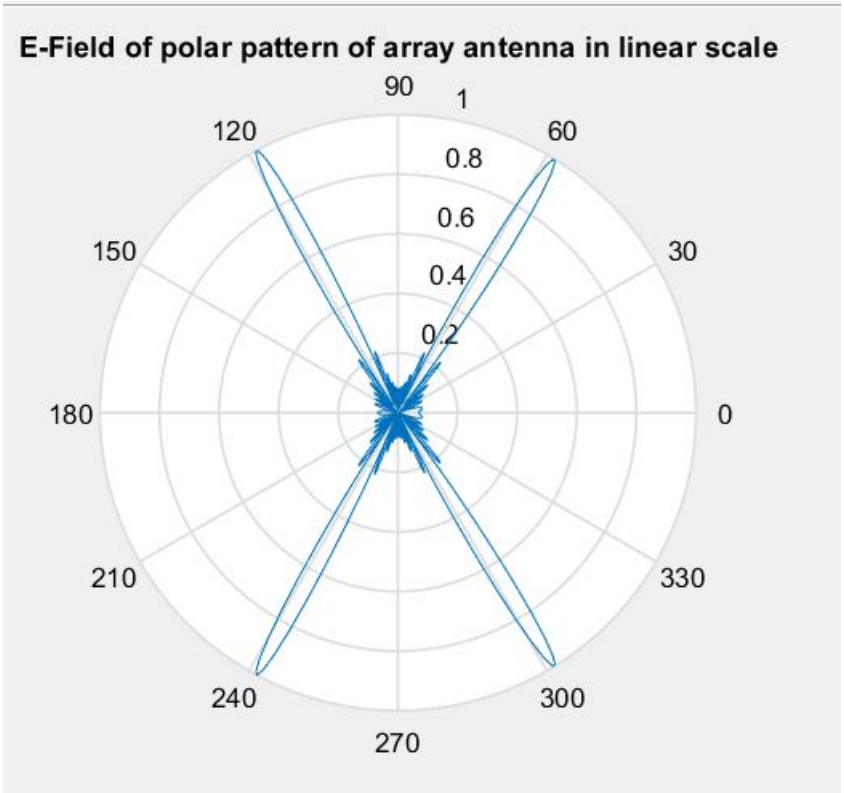
```
N=12 ;
% input distance w.r.t wavelength
dis_div_wavelength=input('Enter the distance between elements divided
by the wavelength ');
Theta_input=input('Enter the angle between elements ');
% angle
Theta=0:0.01:2*pi ;
alpha=-2*pi*dis_div_wavelength*cos(Theta_input);
Epsi=alpha+2*pi*(dis_div_wavelength)*cos(Theta) ;
x1=(N/2).*(Epsi);
x2=(1/2)*(Epsi);
AF=sin(x1)./(N*sin(x2));
G=abs(AF);
 polar(Theta,G);
 title('E-Field of polar pattern of array antenna in linear scale');
```

Output:

```
Enter the distance between elements divided by the wavelength 0.5
Enter the angle between elements 45
```



```
Enter the distance between elements divided by the wavelength 1
```



```
Enter the distance between elements divided by the wavelength 1.5
```