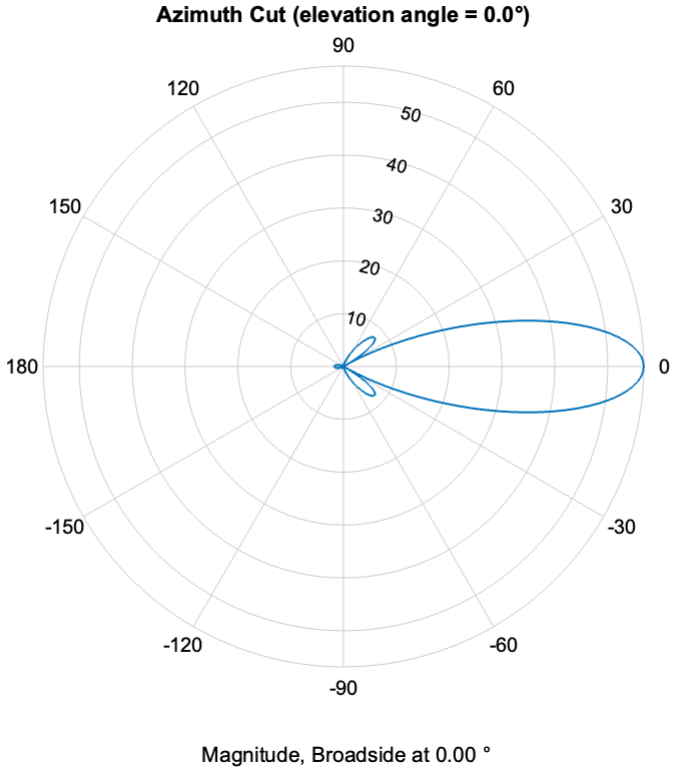
Comparing Antenna Panel Calculations with NeoRadium

```
c = physconst('LightSpeed');
fc = 6e9;
lambda = c/fc;
antenna3 = phased.NRAntennaElement('PolarizationAngle', 0);
antenna4 = phased.NRAntennaElement('PolarizationAngle', 90);

array = phased.NRRectangularPanelArray('ElementSet', ...
        {antenna3, antenna4},'Size',[4, 4, 1, 1],'Spacing', ...
        [0.5*lambda, 0.5*lambda,3*lambda, 3*lambda]);
pattern(array,fc,-180:180,0,'CoordinateSystem','polar','type', 'efield',
'Normalize', false);
```



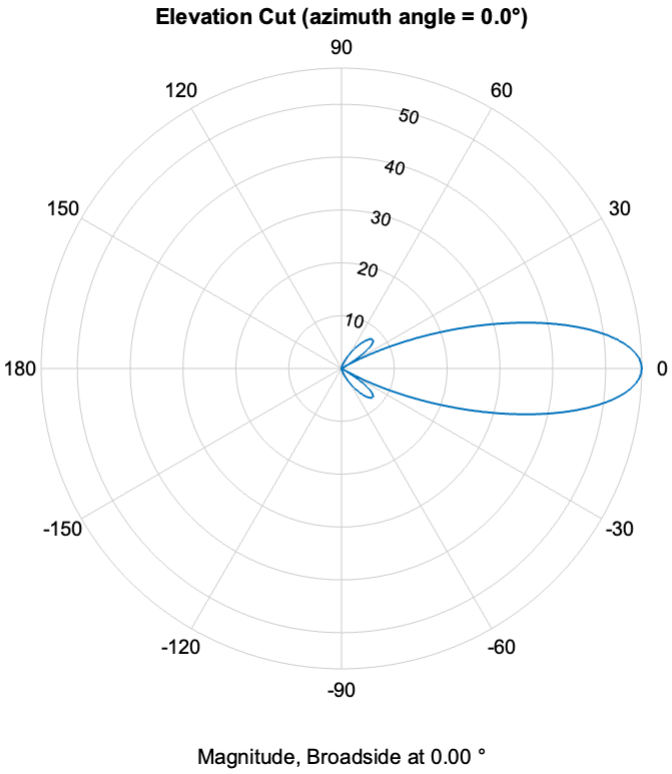

```
a = pattern(array,fc,-180:180,0,'CoordinateSystem','polar','type',
'efield', 'Normalize', false);
a(176:185)
```

```
ans = 10×1
   53.7669
   54.8577
   55.7174
   56.3376
   56.7122
   56.8375
   56.7122
   56.3376
   55.7174
```

```
    54.8577
```

```
pattern(array,fc,0,-90:90,'CoordinateSystem','polar','type', 'efield',
'Normalize', false);
```

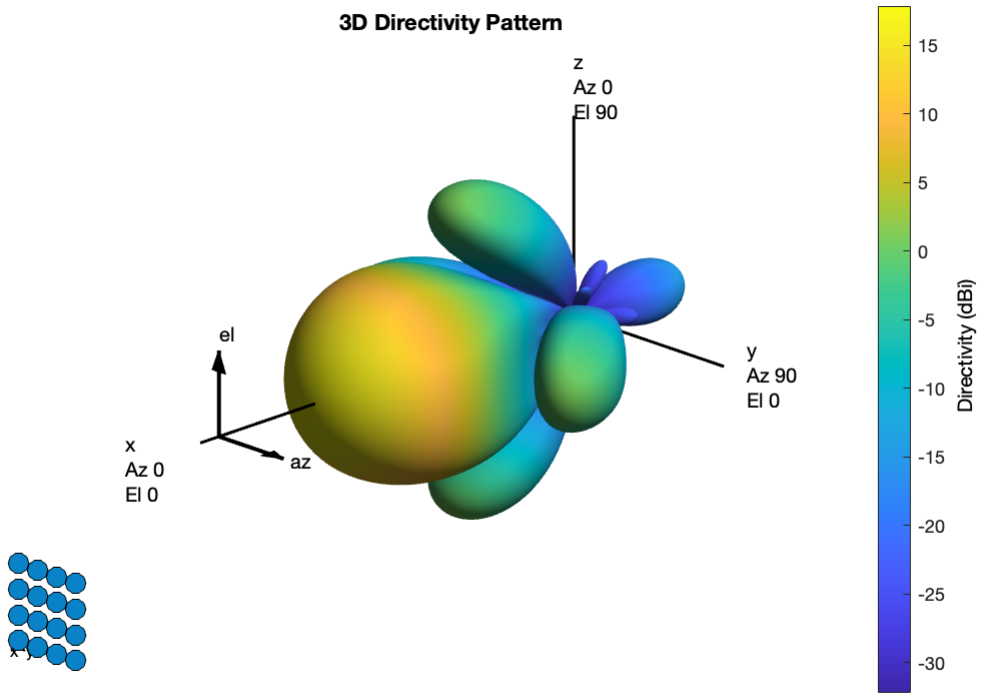
Right click to interact with the plot




```
a = pattern(array,fc,0,-90:90,'CoordinateSystem','polar','type', 'efield',
'Normalize', false);
a(131:140)
```

```
ans = 10×1
    7.7733
    7.9447
    8.0336
    8.0479
    7.9953
    7.8835
    7.7200
    7.5120
    7.2665
    6.9901
```

```
tic;
pattern(array,fc,'ShowArray',true);
```




```
toc;
```

```
Elapsed time is 114.807911 seconds.
```

```
% Saving files
outPath = fileparts(matlab.desktop.editor.getActiveFilename);

directivity = pattern(array,fc,'ShowArray',true);
save(strcat(outPath,'/PanelDirectivity.mat'),'directivity');

powerDb = pattern(array,fc,'ShowArray',true, 'type', 'powerdb',
'Normalize', false);
save(strcat(outPath,'/PanelPowerDb.mat'),'powerDb');

field = pattern(array,fc,'ShowArray',true, 'type', 'efield', 'Normalize',
false);
save(strcat(outPath,'/PanelField.mat'),'field');

directivity(86:95,181)
```

```
ans = 10×1
   17.3855
   17.5599
   17.6950
   17.7912
   17.8487
```

17.8679
17.8487
17.7912
17.6950
17.5599