Contents


```
%Reconfigurable Array Antenna using LumpedRLC to simulate PIN
%Edit LumpedRLC with Newly added function:hfssAssignLumpedRLC and hfssEditLumpedRLC
```

Initial antenna parameter

```
clear all
Units = 'mm';
fc = 2;%GHz
%Patch 1
W_p1 = 5.25;
L_p1 = 10;
%Patch 2
W_p2 = 5.25;
L_p2 = 10;
%PIN
W_pin = 0.4;
L_pin = 1;

%Array config
D_long = 6; %Edge to Edge
D_short = 5;
M_array = 8;
N_array = 16;

%RLC
R_ohm = 1;
```

```
disp('Sctrip Runing')
false = 0;
true = 1;
fileName = ['Reconfigurable Array'];
tmpPrjFile = ['D:\MATLAB\matlabHFSSApi\temp',fileName,'.aedt'];
tmpDataFile = 'D:\MATLAB\matlabHFSSApi\temp\tmpData.m';
tmpScriptFile = ['D:\MATLAB\matlabHFSSApi\temp\',fileName,'.vbs'];

fid = fopen(tmpScriptFile, 'wt'); % 'wt'表示以文本模式打开文件，可写，覆盖原有内容
% 创建一个新的工程并插入一个新的设计
hfssNewProject(fid);
hfssInsertDesign(fid, fileName);
```

```
Sctrip Runing
```

add vars

```
%添加设计变量
hfssaddVar(fid,'W_p1',W_p1,Units);
hfssaddVar(fid,'L_p1',L_p1,Units);
hfssaddVar(fid,'W_p2',W_p2,Units);
hfssaddVar(fid,'L_p2',L_p2,Units);
hfssaddVar(fid,'W_pin',W_pin,Units);
hfssaddVar(fid,'L_pin',L_pin,Units);
hfssaddVar(fid,'D_long',D_long,Units);
hfssaddVar(fid,'D_short',D_short,Units);
hfssaddVar(fid,'R_ohm',R_ohm,'ohm');
```

Single Reconfigurable patch

```
%Patch1
Name = 'Patch1';
Start = {'-W_p1/2',0, 0};
hfssRectangle(fid,Name,'Z',Start,'W_p1','L_p1',Units);

%Pin1
Name = 'PIN1';
Start = {'-W_pin/2','L_p1', 0};
hfssRectangle(fid,Name,'Z',Start,'W_pin','L_pin',Units);

%Patch2
Name = 'Patch2';
Start = {'-W_p2/2','L_p1+L_pin', 0};
hfssRectangle(fid,Name,'Z',Start,'W_p2','L_p2',Units);
```

Assign boundary

```
%PEC
hfssAssignPE(fid, 'PecP1', {'Patch1'});
hfssAssignPE(fid, 'PecP2', {'Patch2'});
%RLC
iLStart = {0,'L_p1', 0};
iLEnd = {0,'L_p1+L_pin', 0};
hfssAssignLumpedRLC(fid, 'LumpedRLC1', 'PIN1', iLStart, iLEnd,'R_ohm',[],[],Units)
```

Array

```
hfssDuplicateAlongLine(fid, {'Patch1','Patch2','PIN1'}, {0,'L_p1+L_p2+L_pin+D_long', 0}, M
_array, Units);
ObjectList_1{1,1} = 'Patch1';
ObjectList_2{1, 1} = 'Patch2';
ObjectList_3{1, 1} = 'PIN1';
for i = 2:M_array
    ObjectList_1{1,i} = ['Patch1_',num2str(i-1)];
    ObjectList_2{1,i} = ['Patch2_',num2str(i-1)];
    ObjectList_3{1,i} = ['PIN1_',num2str(i-1)];
end
hfssDuplicateAlongLine(fid, ObjectList_1, {'max(W_p1,W_p2)+D_short',0, 0}, N_array, Units)
;
hfssDuplicateAlongLine(fid, ObjectList_2, {'max(W_p1,W_p2)+D_short',0, 0}, N_array, Units)
;
```

```
hfssDuplicateAlongLine(fid, ObjectList_3, {'max(W_p1,W_p2)+D_short',0, 0}, N_array, Units)
;

for i = 2:N_array
    ObjectList_1{i,1} = ['Patch1_',num2str(7+i-1)];
    ObjectList_2{i,1} = ['Patch2_',num2str(7+i-1)];
    ObjectList_3{i,1} = ['PIN1_',num2str(7+i-1)];

end
for i = 2:M_array
    for j = 2:N_array
        ObjectList_1{j,i} = [ObjectList_1{1,i},'_',num2str(j-1)];
        ObjectList_2{j,i} = [ObjectList_1{1,i},'_',num2str(j-1)];
        ObjectList_3{j,i} = [ObjectList_1{1,i},'_',num2str(j-1)];
    end
end
```

fclose

```
fclose(fid);
disp(tmpScriptFile)
disp('Sctrip Completed')
```

```
D:\MATLAB\matlabHFSSApi\temp\Reconfigurable Array.vbs
Sctrip Completed
```

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