SONNETANTENNADESIGNGUI('CALLBACK', hObject, eventdata, handles,...)
calls the local function named CALLBACK in SONNETANTENNADESIGNGUI.M with the given input arguments.

SONNETANTENNADESIGNGUI('Property','Value',...) creates a new SONNETANTENNADESIGNGUI or raises the existing singleton*. Starting from the left, property value pairs are applied to the GUI before SonnetAntennaDesignGUI_OpeningFunction gets called. An unrecognized property name or invalid value makes property application stop. All inputs are passed to SonnetAntennaDesignGUI_OpeningFcn via varargin.

*See GUI Options on GUIDE's Tools menu. Choose "GUI allows only one instance to run (singleton)".

See also: GUIDE, GUIDATA, GUIHANDLES

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name', mfilename, ...
    'gui_Singleton', gui_Singleton, ...
    'gui_OpeningFcn', @SonnetAntennaDesignGUI_OpeningFcn, ...
    'gui_OutputFcn', @SonnetAntennaDesignGUI_OutputFcn, ...
    'gui_LayoutFcn', [], ...
    'gui_Callback', []);
if nargin & isstr(varargin{1})
    gui_State.gui_Callback = str2func(varargin{1});
end
if nargout
    [varargout{1:nargout}] = gui_mainfcn(gui_State, varargin{:});
else
    gui_mainfcn(gui_State, varargin{:});
end
% End initialization code - DO NOT EDIT

% --- Executes just before SonnetAntennaDesignGUI is made visible.
function SonnetAntennaDesignGUI_OpeningFcn(hObject, eventdata, handles, varargin)
% This function has no output args, see OutputFcn.
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
% varargin   command line arguments to SonnetAntennaDesignGUI (see VARARGIN)

% Choose default command line output for SonnetAntennaDesignGUI
handles.output = hObject;

% Update handles structure
guida(hObject, handles);

if strcmp(get(hObject,'Visible'),'off')
    initialize_gui(hObject, handles);
end

% UIWAIT makes SonnetAntennaDesignGUI wait for user response (see UIRESUME)
% uiwait(handles.figure1);

% --- Outputs from this function are returned to the command line.
function varargout = SonnetAntennaDesignGUI_OutputFcn(hObject, eventdata, handles)
% varargout  cell array for returning output args (see VARARGOUT);
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Get default command line output from handles structure
varargout{1} = handles.output;

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  START  Freq Block
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  EXECUTED  DURING  OBJECT  CREATION
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% --- Executes during object creation, after setting all properties.
function Freq_CreateFcn(hObject, eventdata, handles)
% hObject    handle to Freq (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background, change
% 'usewhitebg' to 0 to use default. See ISPC and COMPUTER.
% usewhitebg = 1;
if usewhitebg
set(hObject,'BackgroundColor','white');
else
    set(hObject,'BackgroundColor',get(0,'defaultUicontrolBackgroundColor'));
end

function Freq_Callback(hObject, eventdata, handles)
    % hObject    handle to Freq (see GCBO)
    % eventdata  reserved - to be defined in a future version of MATLAB
    % handles    structure with handles and user data (see GUIDATA)

    % Hints: get(hObject,'String') returns contents of Freq as text
    %        str2double(get(hObject,'String')) returns contents of
    %        Freq as a double
    Freq = str2double(get(hObject, 'String'));
    if isnan(Freq)
        set(hObject, 'String', '1');
        errordlg('Input must be a number','Error');
    end

data = getappdata(gca, 'metricdata');
data.Freq = Freq;
setappdata(gca, 'metricdata', data);

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

START Perm Block
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% --- Executes during object creation, after setting all properties.
function Perm_CreateFcn(hObject, eventdata, handles)
    % hObject    handle to Perm (see GCBO)
    % eventdata  reserved - to be defined in a future version of MATLAB
    % handles    empty - handles not created until after all
        CreateFcns called

    % Hint: edit controls usually have a white background, change
    % 'usewhitebg' to 0 to use default. See ISPC and COMPUTER.
    usewhitebg = 1;
    if usewhitebg
        set(hObject,'BackgroundColor','white');
    else
        set(hObject,'BackgroundColor',get(0,'defaultUicontrolBackgroundColor'));
    end

function Perm_Callback(hObject, eventdata, handles)
    % hObject    handle to Perm (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of Perm as text
% str2double(get(hObject,'String')) returns contents of Perm as a double
Perm = str2double(get(hObject, 'String'));
if isnan(Perm)
    set(hObject, 'String', 2);
    errordlg('Input must be a number','Error');
end

data = getappdata(gcbf, 'metricdata');
data.Perm = Perm;
setappdata(gcbf, 'metricdata', data);

% --- Executes during object creation, after setting all properties.
function Height_CreateFcn(hObject, eventdata, handles)
% hObject    handle to Height (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background, change % 'usewhitebg' to 0 to use default. See ISPC and COMPUTER.
usewhitebg = 1;
if usewhitebg
    set(hObject,'BackgroundColor','white');
else
    set(hObject,'BackgroundColor',get(0,'defaultUicontrolBackgroundColor','white'));
end

function Height_Callback(hObject, eventdata, handles)
% hObject    handle to Height (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of Height as text
% str2double(get(hObject,'String')) returns contents of Height as a double
Height = str2double(get(hObject, 'String'));
if isnan(Height)
set(hObject, 'String', 50);
errordlg('Input must be a number','Error');

end

data = getappdata(gcbf, 'metricdata');
data.Height = Height;
setappdata(gcbf, 'metricdata', data);

%%%%%%%%%%%%%%%%%%%%%%%%%%%% START Zin Block %%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%% --- Executes during object creation, after setting all properties.
function Zin_CreateFcn(hObject, eventdata, handles)
    % hObject    handle to Zin (see GCBO)
    % eventdata  reserved - to be defined in a future version of MATLAB
    % handles    empty - handles not created until after all CreateFcns called

    if ispc
        set(hObject,'BackgroundColor','white');
    else
        set(hObject,'BackgroundColor',get(0,'defaultUicontrolBackgroundColor'));
    end

function Zin_Callback(hObject, eventdata, handles)
    % hObject    handle to Zin (see GCBO)
    % eventdata  reserved - to be defined in a future version of MATLAB
    % handles    structure with handles and user data (see GUIDATA)

    % Hints: get(hObject,'String') returns contents of Zin as text
    % str2double(get(hObject,'String')) returns contents of Zin as a double
    Zin = str2double(get(hObject, 'String'));
    if isnan(Zin)
        set(hObject, 'String', 50);
        errordlg('Input must be a number','Error');
    end

data = getappdata(gcbf, 'metricdata');
data.Zin = Zin;
setappdata(gcbf, 'metricdata', data);
% --- Executes on button press in GenSim.
function GenSim_Callback(hObject, eventdata, handles)
% hObject    handle to GenSim (see GCBO)
% eventdata  reserved - to be defined in a future version of
% MATLAB
% handles    structure with handles and user data (see GUIDATA)
clear

data = getappdata(gcbf, 'metricdata');
GenerateSimulate(data.Freq, data.Zin, data.Height, data.Perm,
data.LossTangentD, data.MetalCond, data.MetalThickness);

% --- Executes on button press in pushbutton2.
function pushbutton2_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton2 (see GCBO)
% eventdata  reserved - to be defined in a future version of
% MATLAB
% handles    structure with handles and user data (see GUIDATA)
initialize_gui(gcbf, handles);

function initialize_gui(fig_handle, handles)
data.Height = 50;
data.Freq = 1;
data.Perm = 2;
data.Zin = 50;
data.LossTangentD = 0.0013;
data.MetalCond = inf;
data.MetalThickness = 0.7;
setappdata(fig_handle, 'metricdata', data);

set(handles.Freq, 'String', data.Freq);
set(handles.Perm, 'String', data.Perm);
set(handles.Height, 'String', data.Height);
set(handles.Zin, 'String', data.Zin);
set(handles.MetalCond, 'String', data.MetalCond);
set(handles.MetalThickness, 'String', data.MetalThickness);
set(handles.LossTangentD, 'String', data.LossTangentD);

function MetalCond_Callback(hObject, eventdata, handles)
% hObject    handle to MetalCond (see GCBO)
% eventdata  reserved - to be defined in a future version of
% MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of MetalCond as text
%        str2double(get(hObject,'String')) returns contents of MetalCond as a double
MetalCond = str2double(get(hObject, 'String'));
if isnan(MetalCond)
    set(hObject, 'String', 50);
    errordlg('Input must be a number','Error');
end

data = getappdata(gcbf, 'metricdata');
data.MetalCond = MetalCond;
setappdata(gcbf, 'metricdata', data);

% --- Executes during object creation, after setting all properties.
function MetalCond_CreateFcn(hObject, eventdata, handles)
    % hObject    handle to MetalCond (see GCBO)
    % eventdata  reserved - to be defined in a future version of MATLAB
    % handles    empty - handles not created until after all CreateFcns called

    % Hint: edit controls usually have a white background on Windows.
    %       See ISPC and COMPUTER.
    if ispc
        set(hObject,'BackgroundColor','white');
    else
        set(hObject,'BackgroundColor',get(0,'defaultUicontrolBackgroundColor'));
    end

function MetalThickness_Callback(hObject, eventdata, handles)
    % hObject    handle to MetalThickness (see GCBO)
    % eventdata  reserved - to be defined in a future version of MATLAB
    % handles    structure with handles and user data (see GUIDATA)

    % Hints: get(hObject,'String') returns contents of MetalThickness as text
    %        str2double(get(hObject,'String')) returns contents of MetalThickness as a double
MetalThickness = str2double(get(hObject, 'String'));
if isnan(MetalThickness)
    set(hObject, 'String', 50);
    errordlg('Input must be a number','Error');
end

data = getappdata(gcbf, 'metricdata');
data.MetalThickness = MetalThickness;
setappdata(gcbf, 'metricdata', data);
function MetalThickness_CreateFcn(hObject, eventdata, handles)
% hObject    handle to MetalThickness (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc
    set(hObject,'BackgroundColor','white');
else
    set(hObject,'BackgroundColor',get(0,'defaultUicontrolBackgroundColor'));
end

function LossTangentD_Callback(hObject, eventdata, handles)
% hObject    handle to LossTangentD (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of LossTangentD as text
%        str2double(get(hObject,'String')) returns contents of LossTangentD as a double
LossTangentD = str2double(get(hObject, 'String'));
if isnan(LossTangentD)
    set(hObject, 'String', 50);
    errordlg('Input must be a number','Error');
end
data = getappdata(gca, 'metricdata');
data.LossTangentD = LossTangentD;
setappdata(gca, 'metricdata', data);

function LossTangentD_CreateFcn(hObject, eventdata, handles)
% hObject    handle to LossTangentD (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc
    set(hObject,'BackgroundColor','white');
else

LAMPIRAN B
SIMULASI SONNET

Pada lampiran berikut ditunjukkan proses kerja dari sonnet dalam melakukan perancangan antena untuk aplikasi WLAN, W-CDMA dan PCS.

1. WLAN

   ____INPUTS___________________________________________
   Height = 0.05 in  
   Permittivity = 4.4  
   Desired Input Impedence = 50 Ohms  
   Frequency = 2.45 GHz  
   Free Space Wavelength = 4.8186 in

   ____INITIAL GUESSES__________________________________
Initial Length = 1.1256 in  
Initial Width = 0.80819 in  
Initial Probe Offset = 0.48176 in  

--- EXPECTED PERFORMANCE ---

Input Impedance = 49.9995 Ohms
2:1 VSWR Bandwidth = 0.49328 %

--- Commencing Patch Length Optimization ---

Simulation # 1
Patch Length = 1.0693 (in).  
This project is expected to utilize 1 MB of Memory.  
Electromagnetic Simulation Complete. Simulation took 29 seconds.  
Resonance Frequency = 2.604 GHz.  
Resonance Frequency Error = 6.2857 %

Simulation # 2
Patch Length = 1.1819 (in).  
This project is expected to utilize 1 MB of Memory.  
Electromagnetic Simulation Complete. Simulation took 20 seconds.  
Resonance Frequency = 2.37 GHz.  
Resonance Frequency Error = -3.2653 %

Simulation # 3
Patch Length = 1.1434 (in).  
This project is expected to utilize 1 MB of Memory.  
Electromagnetic Simulation Complete. Simulation took 20 seconds.  
Resonance Frequency = 2.444 GHz.  
Resonance Frequency Error = -0.2449 %

Simulation # 4
Patch Length = 1.1406 (in).  
This project is expected to utilize 1 MB of Memory.  
Electromagnetic Simulation Complete. Simulation took 20 seconds.  
Resonance Frequency = 2.45 GHz.  
Resonance Frequency Error = 0 %

--- Patch Length Optimization Completed ---

-----------------------------------------------

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----- REPORT -----

Patch Length = 1.1406 (in).
Patch Width = 0.80819 (in).
Probe Offset = 0.48819 (in).
Resonance Frequency = 2.45 GHz.
Resonance Frequency Error = 0 %
Input Impedence = 8.9084 Ohms
Input Impedence Error = 82.1832 %
VSWR 2:1 Bandwidth = 0.001

Project Filename = D:\T\A\Sonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1004.son

---------- Commencing Probe Position Optimization ---------

Simulation # 5
Probe Position = 0.51328 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 5.1306 (Ohm).
Zin Error = -89.7388 %

Simulation # 6
Probe Position = 0.45625 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 13.6659 (Ohm).
Zin Error = -72.6683 %

Simulation # 7
Probe Position = 0.39922 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 29.3367 (Ohm).
Zin Error = -41.3265 %

Simulation # 8
Probe Position = 0.34219 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 48.055 (Ohm).
Zin Error = -3.89 %
Simulation # 9
Probe Position = 0.28516 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 68.0937 (Ohm).
Zin Error = 36.1874 %
-----------------------------------------------------

Simulation # 10
Probe Position = 0.33665 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 48.055 (Ohm).
Zin Error = -3.89 %
-----------------------------------------------------

----------  Probe Position Optimization Completed  --------

------------------  R E P O R T  ------------------

Patch Length = 1.1406 (in).
Patch Width = 0.80819 (in).
Probe Offset = 0.33665 (in).
Resonance Frequency = 2.456 GHz.
Input Impedence Approximately = 48.055 Ohms
Maximum Input Impedence Error = 3.89 %
VSWR 2:1 Bandwidth = 2.8502

Project Filename = D:\T\A\Sonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1010.son

----------  Commencing Patch Length Optimization  --------

Simulation # 11
Patch Length = 1.0836 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 24 seconds.
Resonance Frequency = 2.578 GHz.
Resonance Frequency Error = 5.2245 %

------------------
Simulation # 12
Patch Length = 1.1977 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Resonance Frequency = 2.344 GHz.
Resonance Frequency Error = -4.3265 %

Simulation # 13
Patch Length = 1.146 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Resonance Frequency = 2.444 GHz.
Resonance Frequency Error = -0.2449 %

Simulation # 14
Patch Length = 1.1432 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Resonance Frequency = 2.45 GHz.
Resonance Frequency Error = 0 %

---------- Patch Length Optimization Completed ----------

----- REPORT -----

Patch Length = 1.1432 (in).
Patch Width = 0.80819 (in).
Probe Offset = 0.33741 (in).
Resonance Frequency = 2.45 GHz.
Resonance Frequency Error = 0 %
Input Impedence = 48.309 Ohms
Input Impedence Error = 3.3819 %
VSWR 2:1 Bandwidth = 2.8571

Project Filename = D:\T\A\Sonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1014.son

Drawing Figures.
Patch Antenna Design Completed in 358.72 seconds.
>>
2. **W_CDMA**

**INPUTS**

- Height = 0.05 in
- Permittivity = 4.4
- Desired Input Impedance = 50 Ohms
- Frequency = 2 GHz
- Free Space Wavelength = 5.9028 in

**INITIAL GUESSES**

- Initial Length = 1.3789 in
- Initial Width = 0.99003 in
- Initial Probe Offset = 0.59016 in

**EXPECTED PERFORMANCE**

- Input Impedance = 49.9995 Ohms
- 2:1 VSWR Bandwidth = 0.40267 %

--------------- Commencing Patch Length Optimization  ---------------

**Simulation # 1**

- Patch Length = 1.3099 (in).
- This project is expected to utilize 1 MB of Memory.
- Electromagnetic Simulation Complete. Simulation took 26 seconds.
- Resonance Frequency = 2.134 GHz.
- Resonance Frequency Error = 6.7 %

**Simulation # 2**

- Patch Length = 1.4478 (in).
- This project is expected to utilize 1 MB of Memory.
- Electromagnetic Simulation Complete. Simulation took 26 seconds.
- Resonance Frequency = 1.941 GHz.
- Resonance Frequency Error = -2.95 %

**Simulation # 3**

- Patch Length = 1.4057 (in).
- This project is expected to utilize 1 MB of Memory.
- Electromagnetic Simulation Complete. Simulation took 21 seconds.
- Resonance Frequency = 1.996 GHz.
Resonance Frequency Error = -0.2 
-----------------------------------------------------

Simulation # 4
Patch Length = 1.4029 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Resonance Frequency = 2 GHz.
Resonance Frequency Error = 0 

---------------------------------------------
------           R E P O R T         ------
---------------------------------------------
Patch Length = 1.4029 (in).
Patch Width = 0.99003 (in).
Probe Offset = 0.60044 (in).
Resonance Frequency = 2 GHz.
Resonance Frequency Error = 0 
Input Impedence = 7.7453 Ohms
Input Impedence Error = 84.5094 
VSWR 2:1 Bandwidth = 0.001

Project Filename = D:\T\A\Sonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1004.son
---------------------------------------------

----------  Commencing Probe Position Optimization  --------

Simulation # 5
Probe Position = 0.6313 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 3.144 (Ohm).
Zin Error = -93.7121 

Simulation # 6
Probe Position = 0.56116 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 11.8839 (Ohm).
Zin Error = -76.2322 

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Simulation # 7
Probe Position = 0.49101 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 28.6429 (Ohm).
Zin Error = -42.7142 %

Simulation # 8
Probe Position = 0.42087 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 42.4588 (Ohm).
Zin Error = -15.0824 %

Simulation # 9
Probe Position = 0.35072 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 64.8176 (Ohm).
Zin Error = 29.6353 %

Simulation # 10
Probe Position = 0.39721 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 49.8759 (Ohm).
Zin Error = -0.24816 %

Simulation # 11
Probe Position = 0.39682 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 49.8759 (Ohm).
Zin Error = -0.24816 %

----------  Probe Position Optimization Completed   --------

---------------------------------------------
------           R E P O R T         --------
---------------------------------------------

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Patch Length = 1.4029 (in).
Patch Width = 0.99003 (in).
Probe Offset = 0.39682 (in).
Resonance Frequency = 2.002 GHz.
Input Impedence Approximately = 49.8759 Ohms
Maximum Input Impedence Error = 0.24816 %
VSWR 2:1 Bandwidth = 2.8472

---------------------------------------------
Project Filename = D:\T A\Sonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1011.son

---------------------------------------------

---------- Commencing Patch Length Optimization ----------

Simulation # 12
Patch Length = 1.3327 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 25 seconds.
Resonance Frequency = 2.103 GHz.
Resonance Frequency Error = 5.15 %

Simulation # 13
Patch Length = 1.473 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 26 seconds.
Resonance Frequency = 1.911 GHz.
Resonance Frequency Error = -4.45 %

Simulation # 14
Patch Length = 1.408 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Resonance Frequency = 1.995 GHz.
Resonance Frequency Error = -0.25 %

Simulation # 15
Patch Length = 1.4045 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Resonance Frequency = 2 GHz.
Resonance Frequency Error = 0 %

---------------------------------------------


----- REPORT -----

--- 

Patch Length = 1.4045 (in).
Patch Width = 0.99003 (in).
Probe Offset = 0.39728 (in).
Resonance Frequency = 2 GHz.
Resonance Frequency Error = 0 %
Input Impedence = 49.8275 Ohms
Input Impedence Error = 0.34509 %
VSWR 2:1 Bandwidth = 2.85

Project Filename = D:\TASonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1015.son

Drawing Figures.
Patch Antenna Design Completed in 389.904 seconds.

>>

3. PCS

--- INPUTS ---

Height = 0.05 in
Permittivity = 4.4
Desired Input Impedence = 50 Ohms
Frequency = 1.85 GHz
Free Space Wavelength = 6.3814 in

--- INITIAL GUESSES ---

Initial Length = 1.4907 in
Initial Width = 1.0703 in
Initial Probe Offset = 0.63801 in

--- EXPECTED PERFORMANCE ---

Input Impedence = 49.9995 Ohms
2:1 VSWR Bandwidth = 0.37247 %
Simulation # 1
Patch Length = 1.4161 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 31 seconds.
Resonance Frequency = 1.977 GHz.
Resonance Frequency Error = 6.8649 %

Simulation # 2
Patch Length = 1.5652 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 25 seconds.
Resonance Frequency = 1.797 GHz.
Resonance Frequency Error = -2.8649 %

Simulation # 3
Patch Length = 1.5213 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Resonance Frequency = 1.846 GHz.
Resonance Frequency Error = -0.21622 %

Simulation # 4
Patch Length = 1.5181 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Resonance Frequency = 1.85 GHz.
Resonance Frequency Error = 0 %

-------- Patch Length Optimization Completed --------
Resonance Frequency Error = 0 %
Input Impedence = 7.3196 Ohms
Input Impedence Error = 85.3608 %
VSWR 2:1 Bandwidth = 0.001

---------------------------------------------
Project Filename = D:\T
A\Sonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1004.son

----------  Commencing Probe Position Optimization  --------

Simulation # 5
 Probe Position = 0.68315 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 4.2113 (Ohm).
Zin Error = -91.5774 %

Simulation # 6
 Probe Position = 0.60724 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 11.2324 (Ohm).
Zin Error = -77.5351 %

Simulation # 7
 Probe Position = 0.53134 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 27.0863 (Ohm).
Zin Error = -45.8273 %

Simulation # 8
 Probe Position = 0.45543 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 40.1516 (Ohm).
Zin Error = -19.6967 %

Simulation # 9
 Probe Position = 0.37953 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 61.2606 (Ohm).
Zin Error = 22.5212 %

Simulation # 10
Probe Position = 0.42002 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 20 seconds.
Real(Zin) = 47.1619 (Ohm).
Zin Error = -5.6762 %

Simulation # 11
Probe Position = 0.41187 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 47.1619 (Ohm).
Zin Error = -5.6762 %

Simulation # 12
Probe Position = 0.40536 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 54.3773 (Ohm).
Zin Error = 8.7545 %

Simulation # 13
Probe Position = 0.40931 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 54.3773 (Ohm).
Zin Error = 8.7545 %

Simulation # 14
Probe Position = 0.41086 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Real(Zin) = 47.1619 (Ohm).
Zin Error = -5.6762 %

----------  Probe Position Optimization Completed   --------
----- REPORT -----  

Patch Length = 1.5181 (in).
Patch Width = 1.0703 (in).
Probe Offset = 0.41086 (in).
Resonance Frequency = 1.852 GHz.
Input Impedence Approximately = 47.1619 Ohms
Maximum Input Impedence Error = 5.6762 %
VSWR 2:1 Bandwidth = 2.6998

Project Filename = D:\T\A\Sonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1014.son

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------------- Commencing Patch Length Optimization -------------

Simulation # 15
Patch Length = 1.4422 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 25 seconds.
Resonance Frequency = 1.945 GHz.
Resonance Frequency Error = 5.1351 %

Simulation # 16
Patch Length = 1.594 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Resonance Frequency = 1.768 GHz.
Resonance Frequency Error = -4.4324 %

Simulation # 17
Patch Length = 1.5237 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Resonance Frequency = 1.846 GHz.
Resonance Frequency Error = -0.21622 %

Simulation # 18
Patch Length = 1.5204 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Resonance Frequency = 1.849 GHz.
Resonance Frequency Error = -0.054054 %

Simulation # 19
Patch Length = 1.5196 (in).
This project is expected to utilize 1 MB of Memory.
Electromagnetic Simulation Complete. Simulation took 21 seconds.
Resonance Frequency = 1.85 GHz.
Resonance Frequency Error = 0 %

--------- Patch Length Optimization Completed ---------

---- REPORT ----
Patch Length = 1.5196 (in).
Patch Width = 1.0703 (in).
Probe Offset = 0.41126 (in).
Resonance Frequency = 1.85 GHz.
Resonance Frequency Error = 0 %
Input Impedence = 47.2442 Ohms
Input Impedence Error = 5.5116 %
VSWR 2:1 Bandwidth = 2.7568

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Project Filename = D:\T\A\Sonnet\SonnetAntennaDesignV3.2\SonnetProjectFiles\PatchAnt1019.son
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Drawing Figures.
Patch Antenna Design Completed in 479.847 seconds.

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