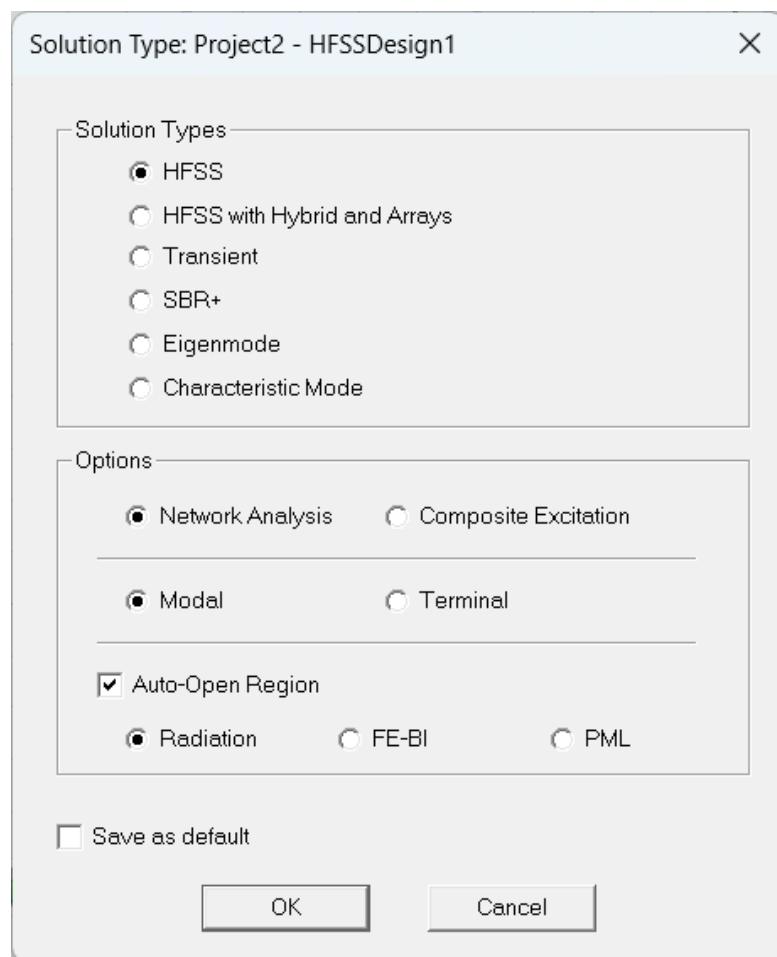
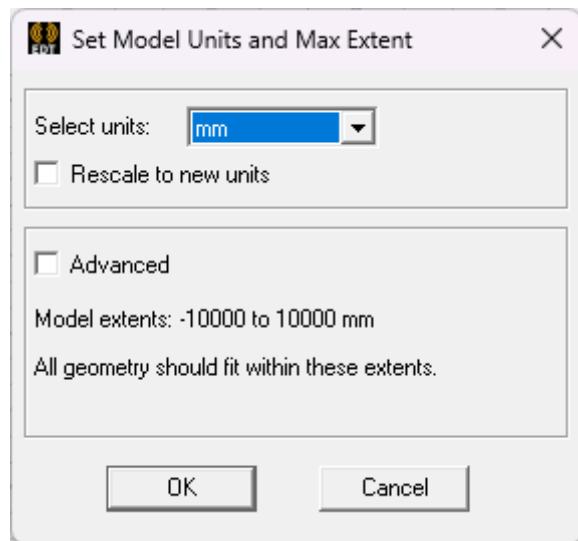




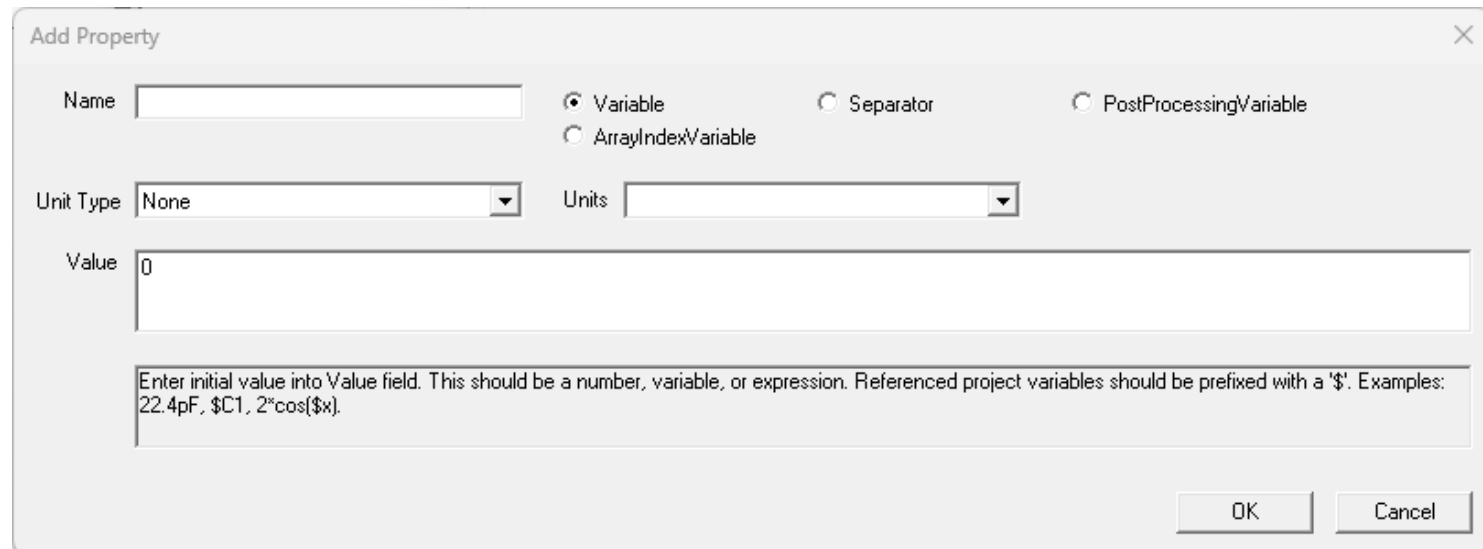
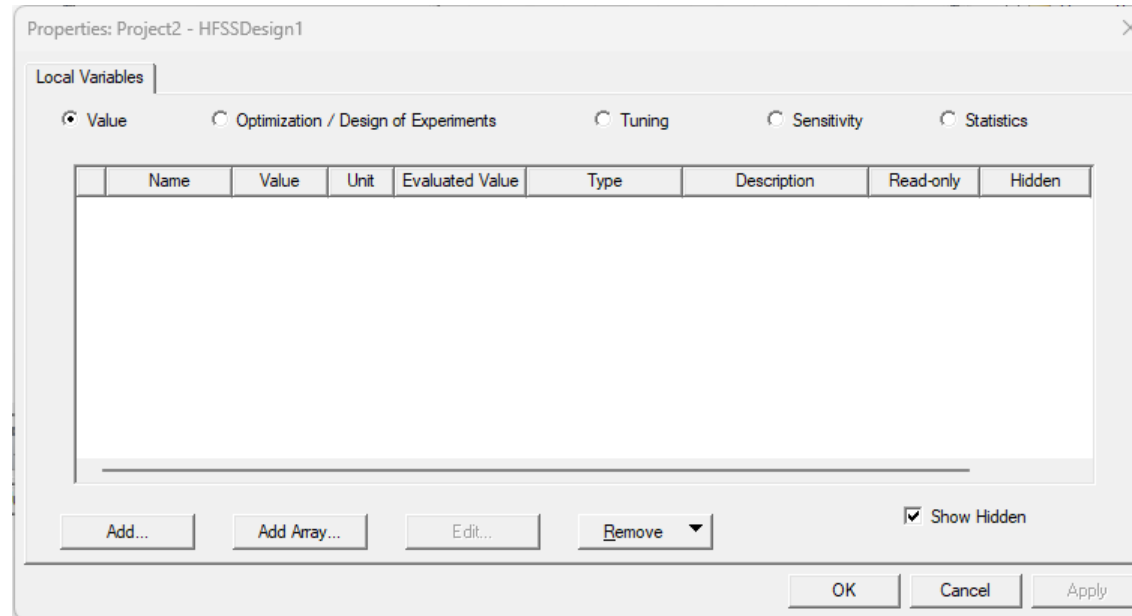
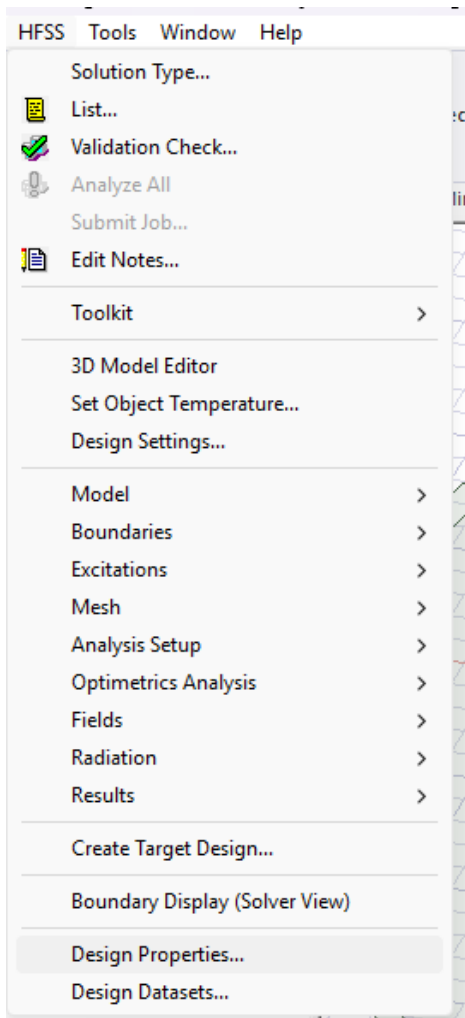
Antena elicoidală



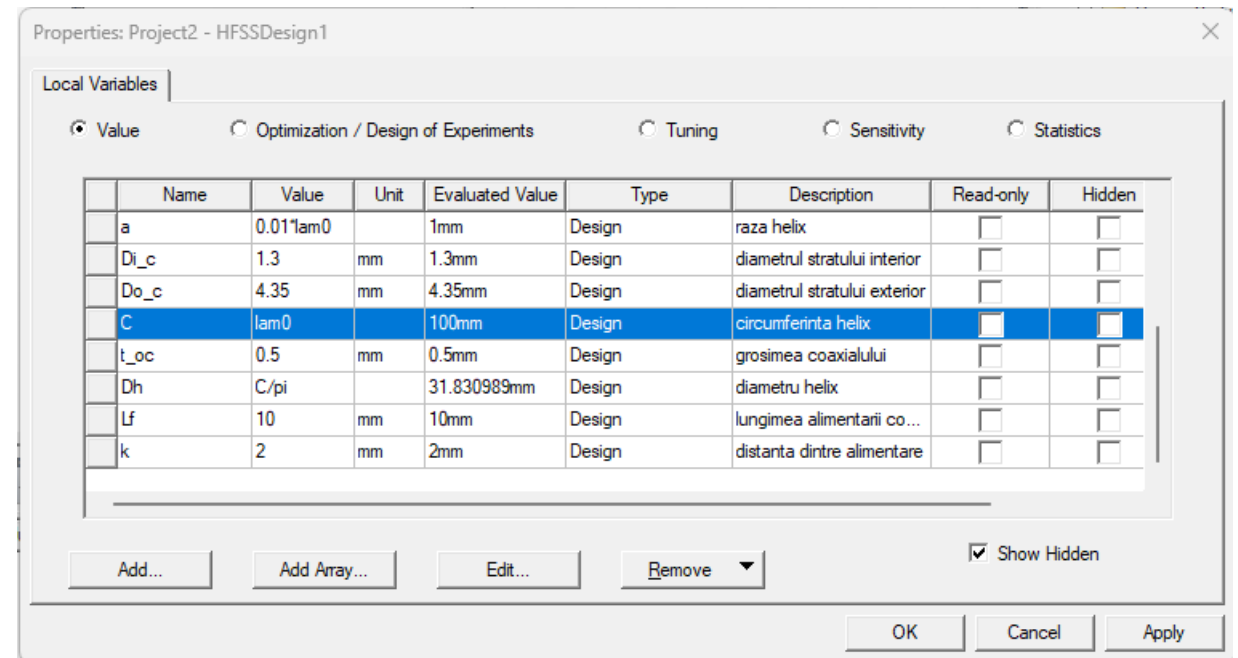
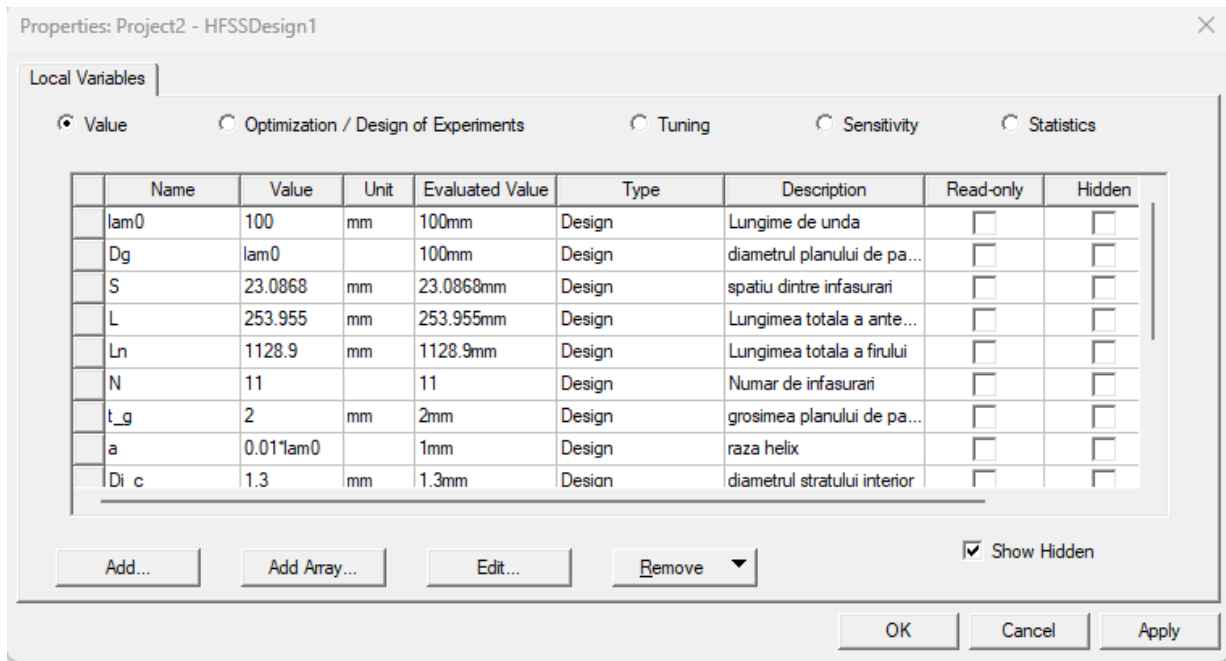
Alegerea unității de măsură și a tipului de soluție utilizat



Introducere de parametri

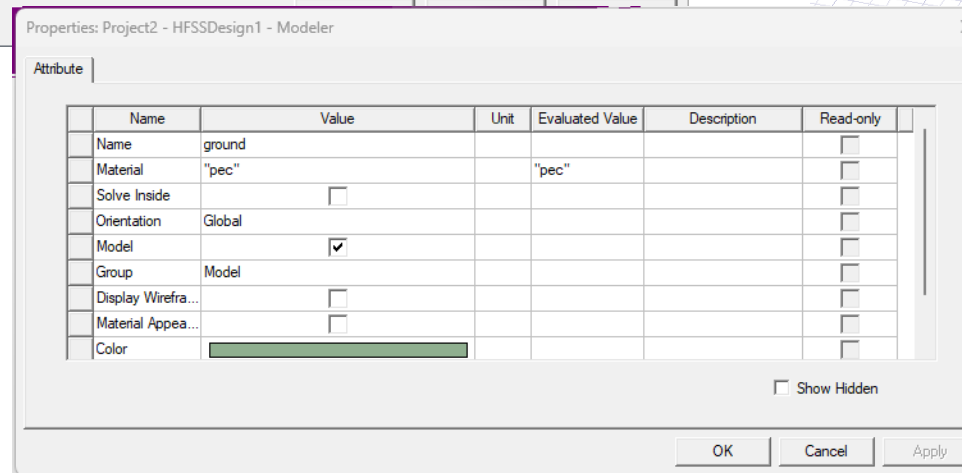
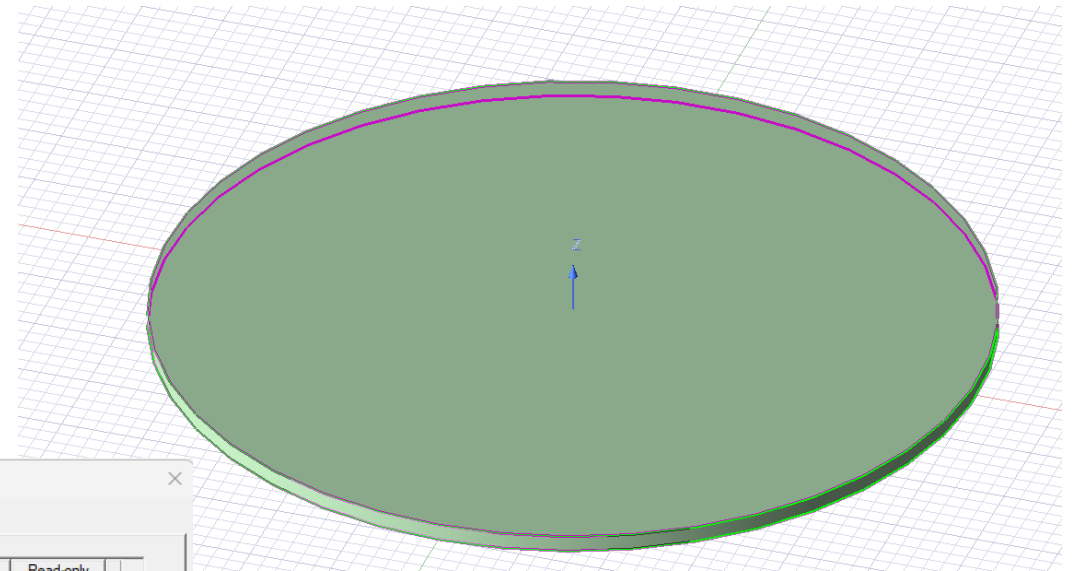
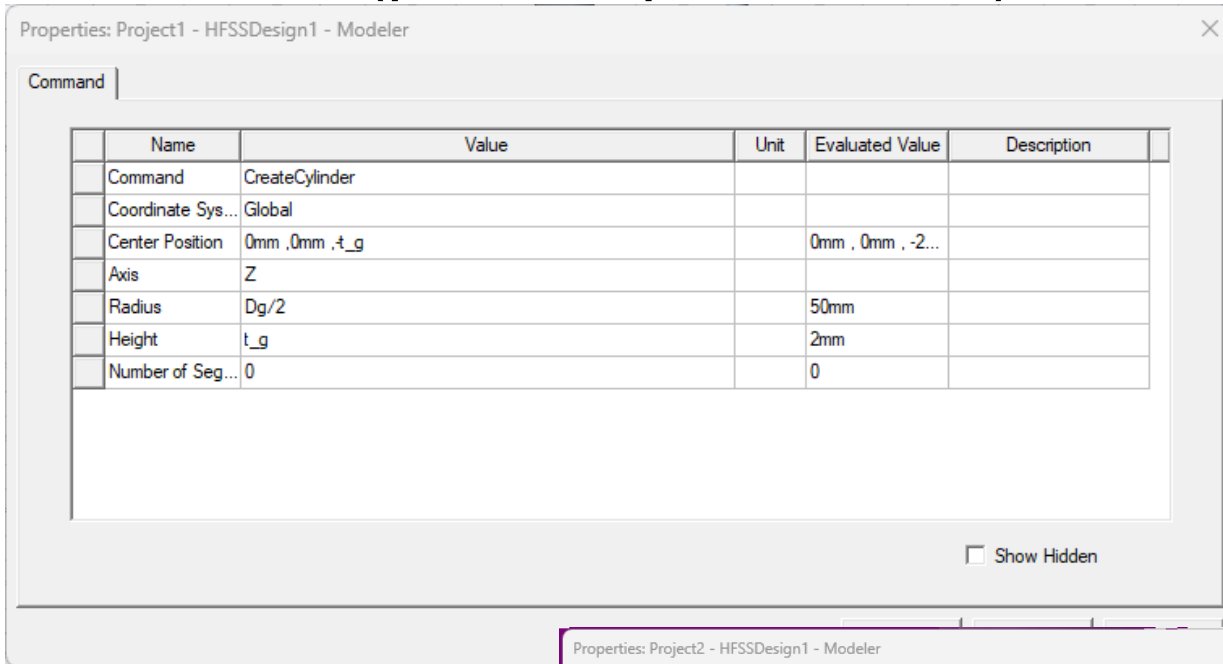


Introducere de parametrii



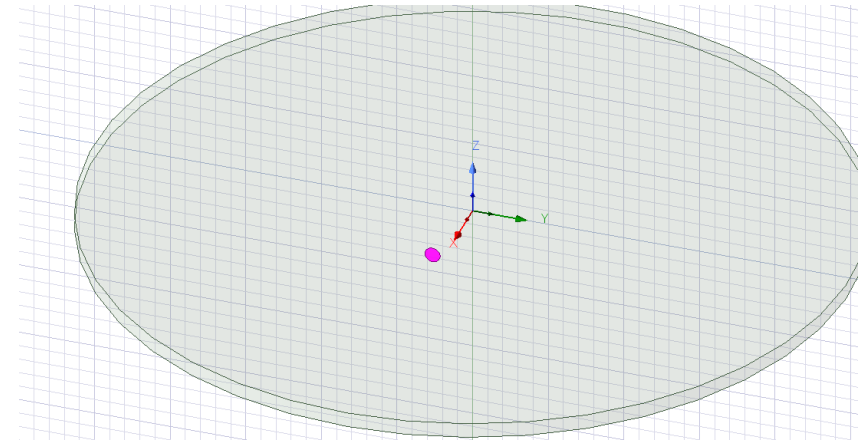
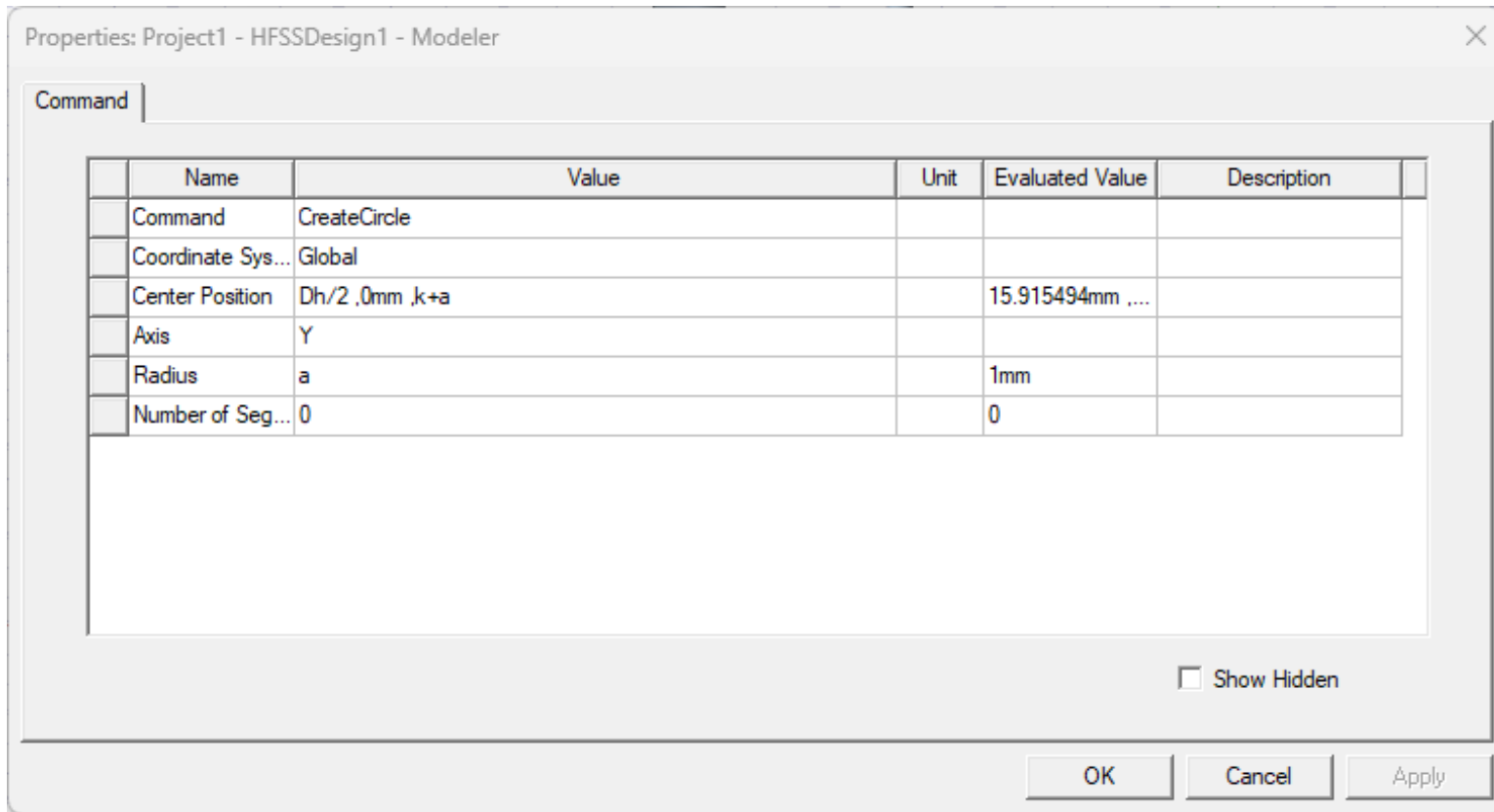
Desenarea planului de pământare

- Draw->Cylinder căruia i se va atribui PEC, raza 50 mm și grosimea 2 mm (plan de pământare)



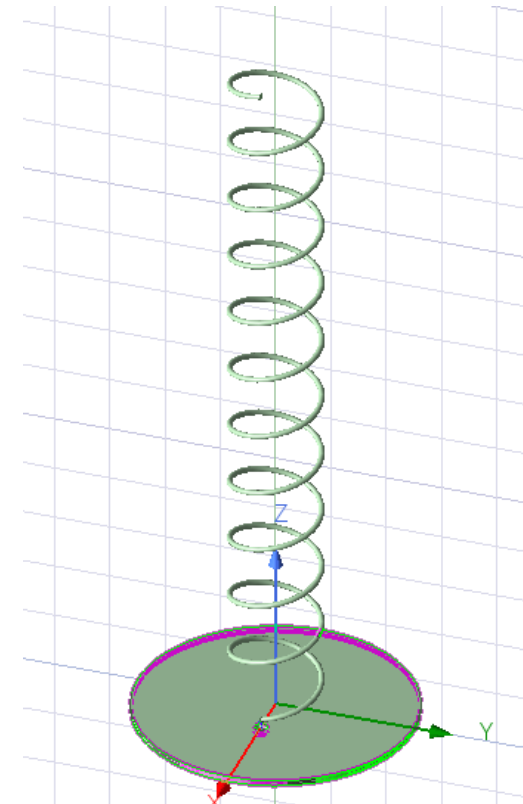
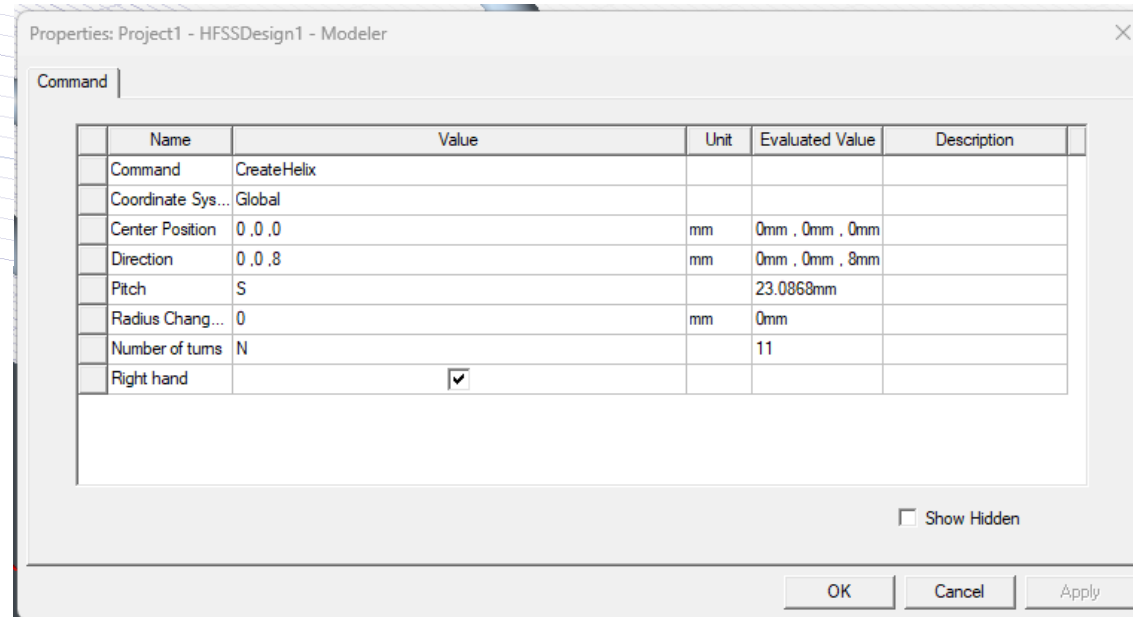
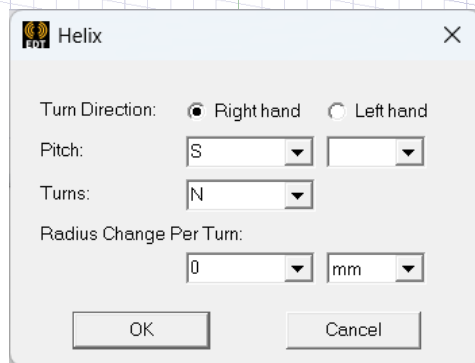
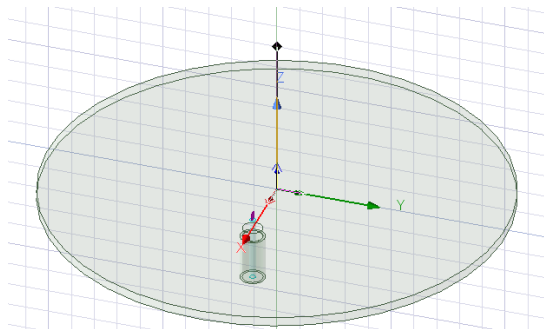
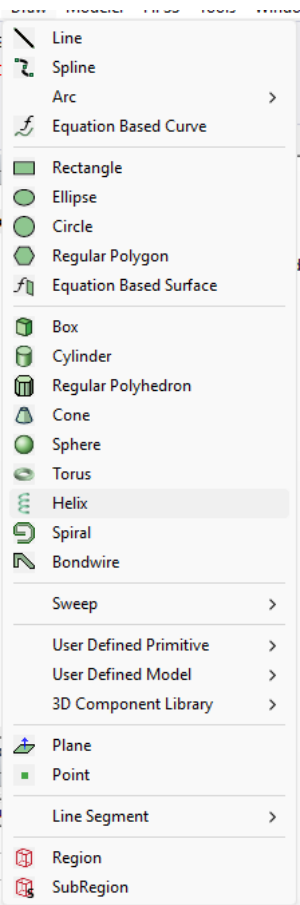
Desenarea antenei helix

- Modificăm planul să fie pe XZ și desenăm un cerc de dimensiunile de mai jos:



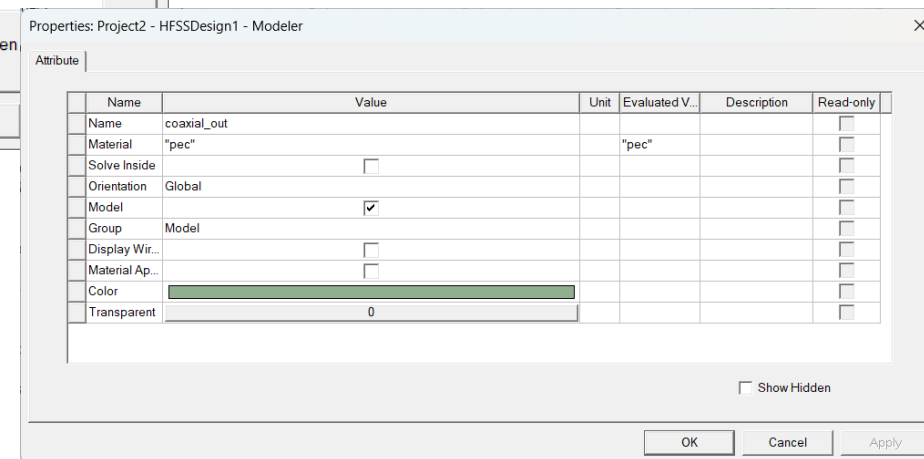
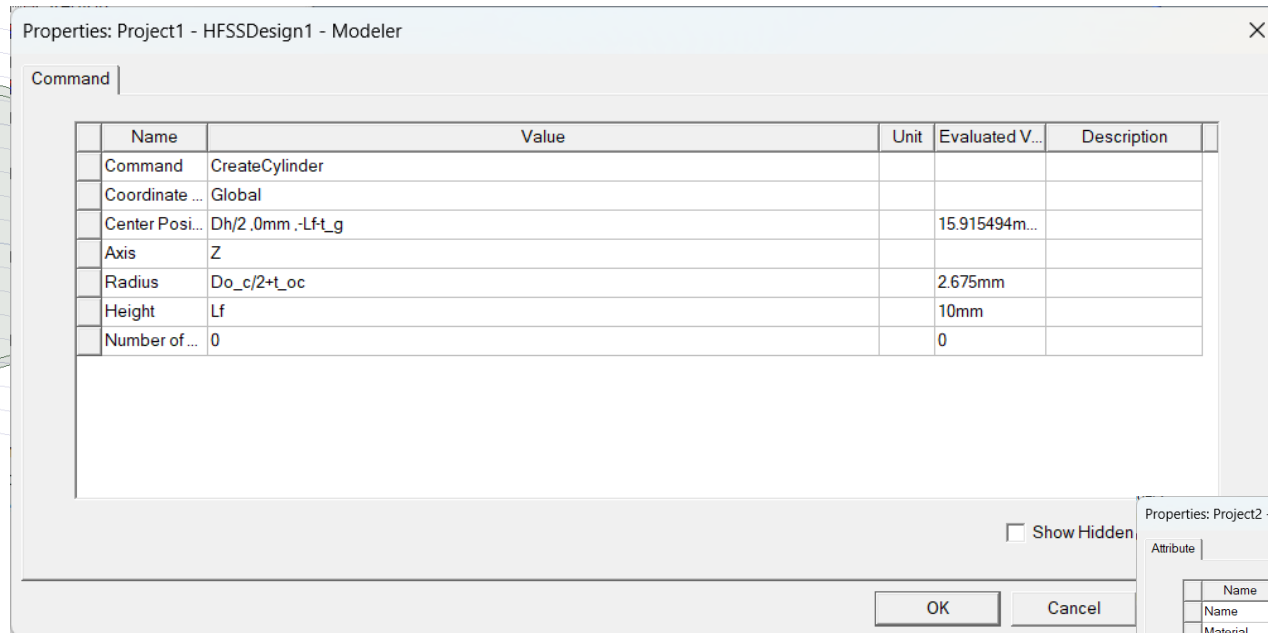
Desenarea antenei helix

- Se modifică planul pe XY
- Se dă click pe centrul axelor de coordonate, apoi click puțin mai sus pe z
- Apare o fereastră unde vom introduce valorile de mai jos
- Se alege material PEC



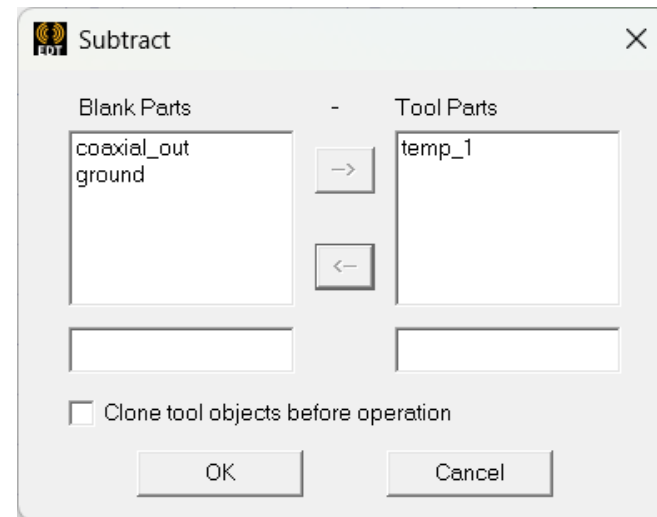
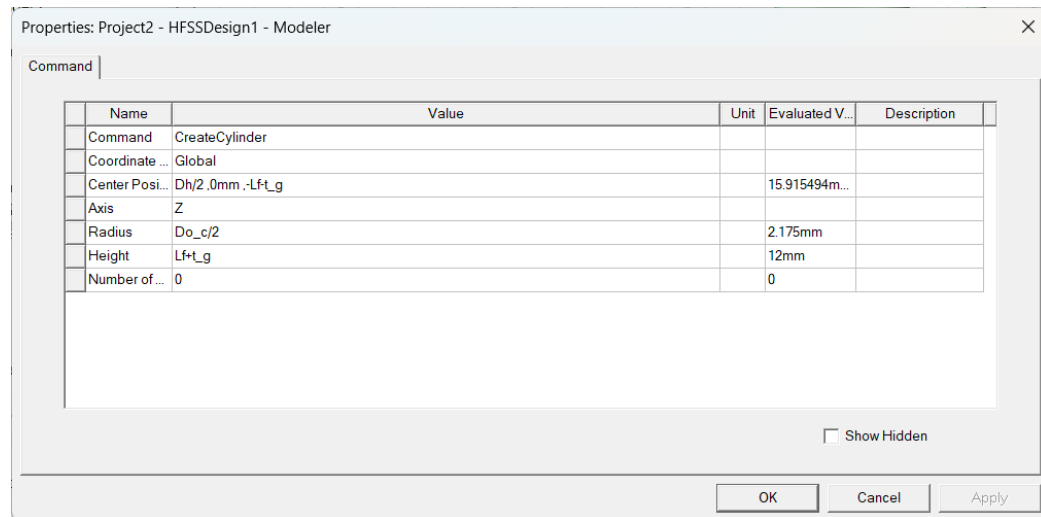
Conductor exterior

- Se deseneaza un cilindru pentru introducerea conductorului exterior al alimentarii



Crearea unei structuri temporare

- Va fi extrasă din conductorul exterior
- Se creează un nou cilindru
- Ii vom da substract acestei noi structuri din coaxial_out și ground



Crearea unui nou dielectric

- Draw->Cylinder
- Se denumește dielectric

Properties: Project2 - HFSSDesign1 - Modeler

Command

Name	Value	Unit	Evaluated V...	Description
Command	CreateCylinder			
Coordinate ...	Global			
Center Posi...	Dh/2.0mm -Lft_g		15.915494m...	
Axis	Z			
Radius	Do_c/2		2.175mm	
Height	Lf		10mm	
Number of ...	0		0	

Show Hidden

OK Cancel Apply

coaxial_out
ground
vacuum
Circle1
Cylinder
Coordinate System
Planes
Lists

- Expand All
- Collapse All
- Select >
- Edit >
- Group >
- Create 3D Component...
- Replace with 3D Component...
- Assign Material...
- View >
- Properties...
- Create Array ...
- Create Open Region ...
- Update Open Region Padding...
- Assign Boundary >
- Assign Excitation >
- Assign Mesh Operation >
- Assign Mesh Region...
- Plot Fields >
- Plot Mesh...
- Plot VRT >
- Plot Particles...

Select Definition

Materials | Material Filters

Search Parameters
Search by Name
Search Criteria
 by Name by Property
Libraries Show Project definitions Select all libraries
[sys] Materials

Search

Relative Permittivity

Name	Location	Origin	Relative Permittivity	Relative Permeability	B Cond
titanium	SysLibrary	Materials	1	1.00018	1820000siem
tungsten	SysLibrary	Materials	1	1	18200000sie
vacuum	Project	Materials	1	1	0
vacuum	SysLibrary	Materials	1	1	0
Water 0.2-35C 0.1-400GHz	SysLibrary	Materials	1	1	0
water_distilled	SysLibrary	Materials	81	0.999991	0.0002sieme
water_fresh	SysLibrary	Materials	81	0.999991	0.01siemens.
water_sea	SysLibrary	Materials	81	0.999991	4siemens/m
ZEONEX RS420 (tm)	SysLibrary	Materials	2.3	1	0
ZEONEX RS420-LDS (tm)	SysLibrary	Materials	2.1	1	0
zinc	SysLibrary	Materials	1	1	16700000sie
zirconium	SysLibrary	Materials	1	1	24400000sie

View/Edit Materials... Add Material... Clone Material(s) Remove Material(s) Export to Library...

OK Cancel Help

View / Edit Material

Material Name
Dielectric

Properties of the Material

Name	Type	Value	Units
Relative Permittivity	Simple	2.1	
Relative Permeability	Simple	1	
Bulk Conductivity	Simple	0	siemens/m
Dielectric Loss Tangent	Simple	0.00021	
Magnetic Loss Tangent	Simple	0	
Magnetic Saturation	Simple	0	tesla
Lande G Factor	Simple	2	
Delta H	Simple	0	A_per_meter
- Measured Frequency	Simple	9.4e+09	Hz
Mass Density	Simple	0	kg/m^3

View/Edit Material for

Active Design
 Active Project
 All Properties

Physics:

Electromagnetic
 Thermal
 Structural

View/Edit Modifier for

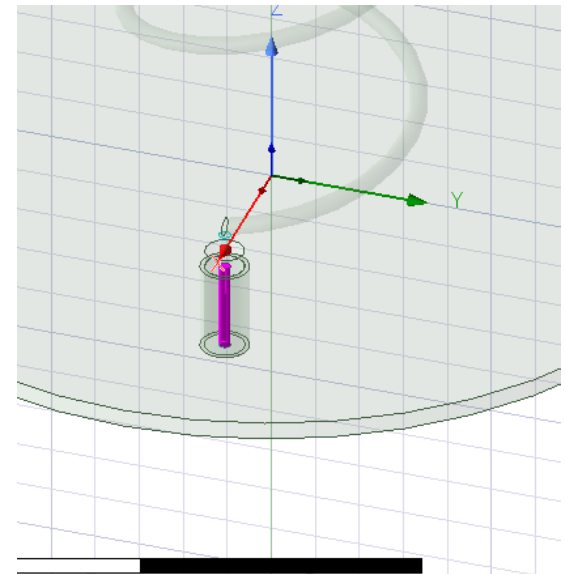
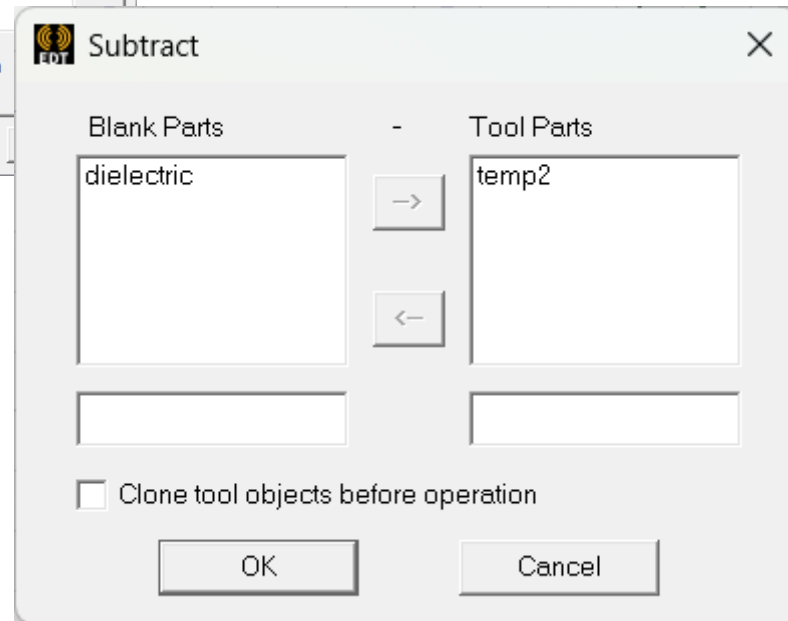
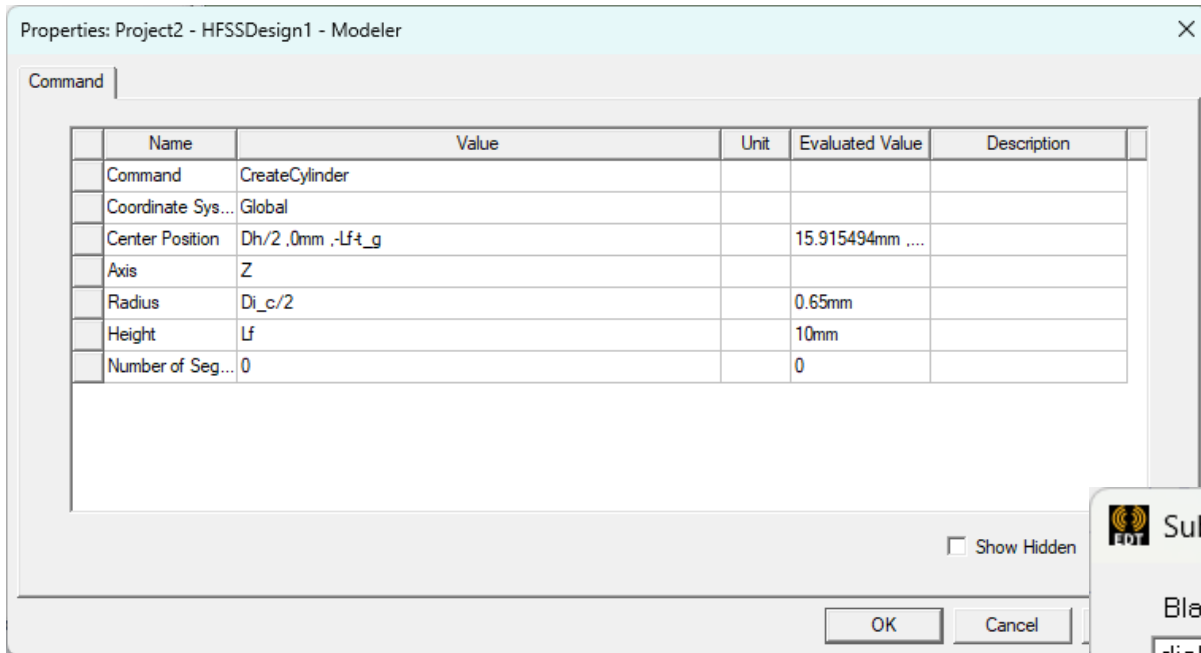
Thermal Modifier
 Spatial Modifier

Material Appearance

Use Material Appearance
Color:

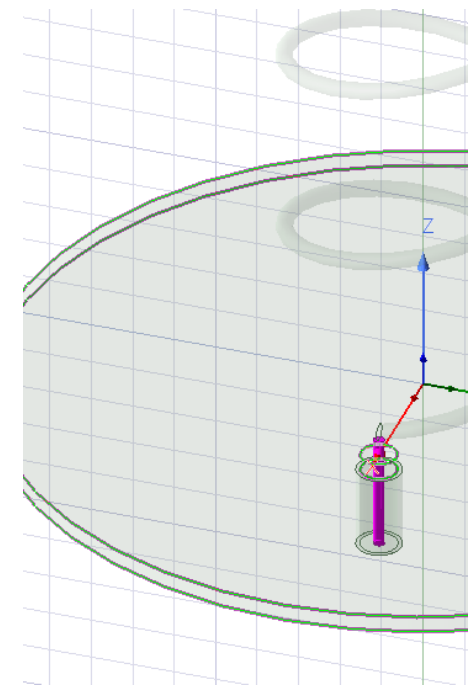
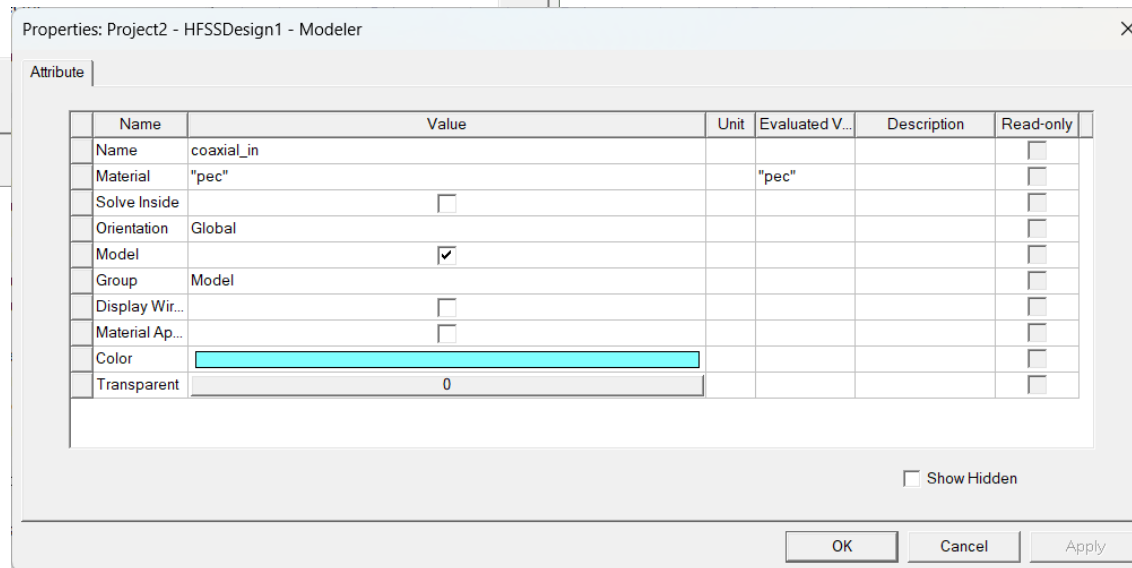
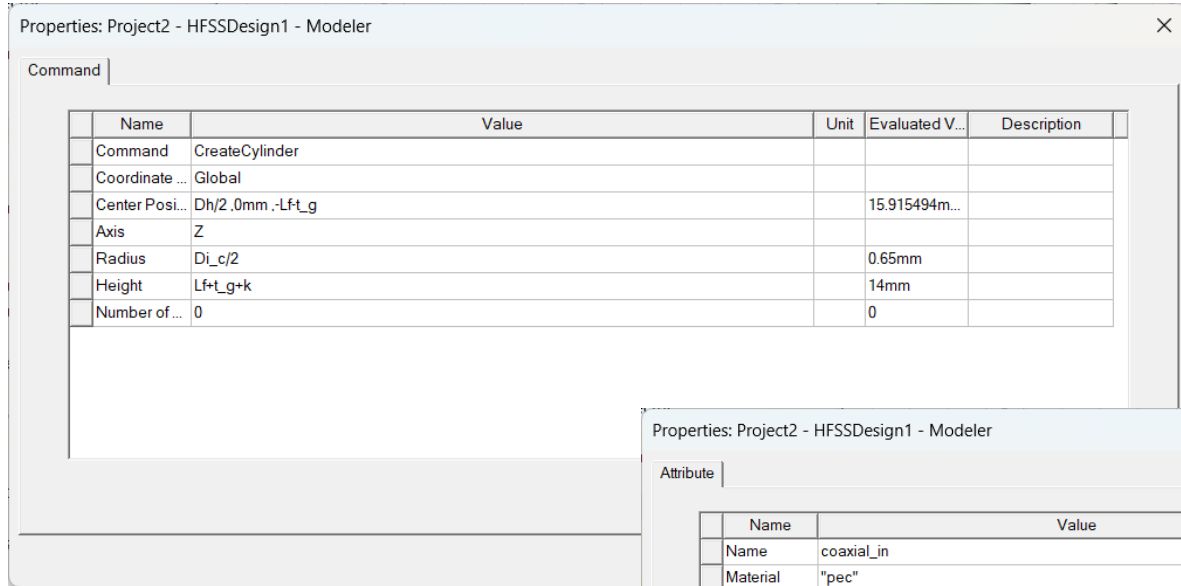
Notes

Crearea structurii temporare 2-cilindru



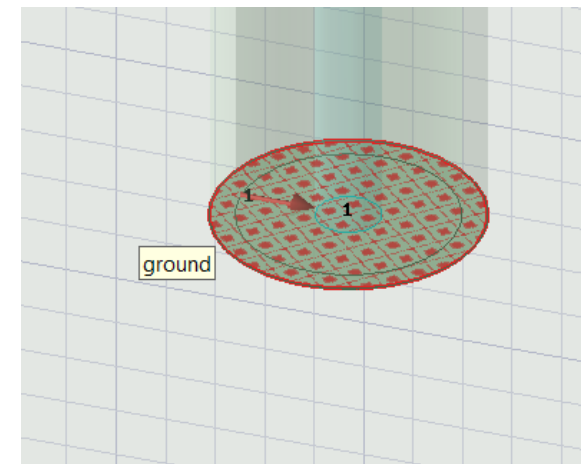
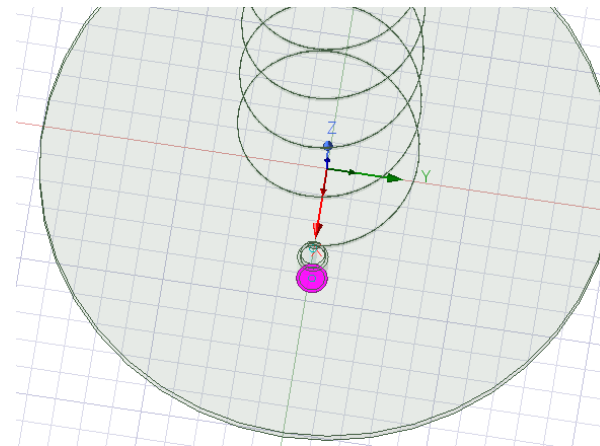
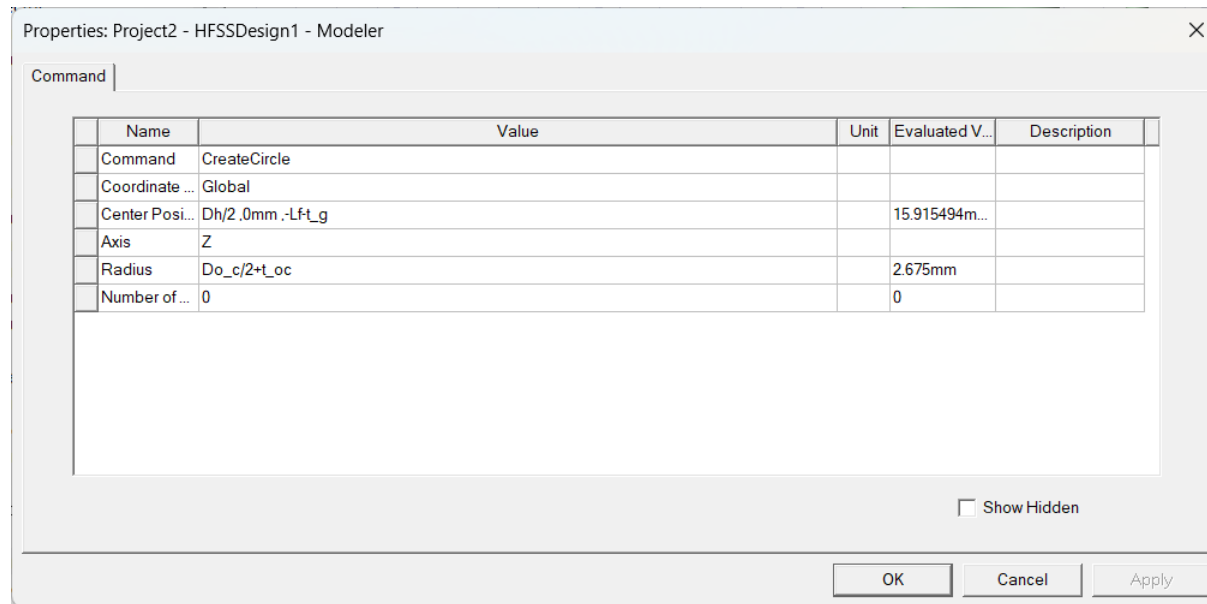
Creare conductor interior

- Se creeaza coaxial_in –conductorul interior din material PEC

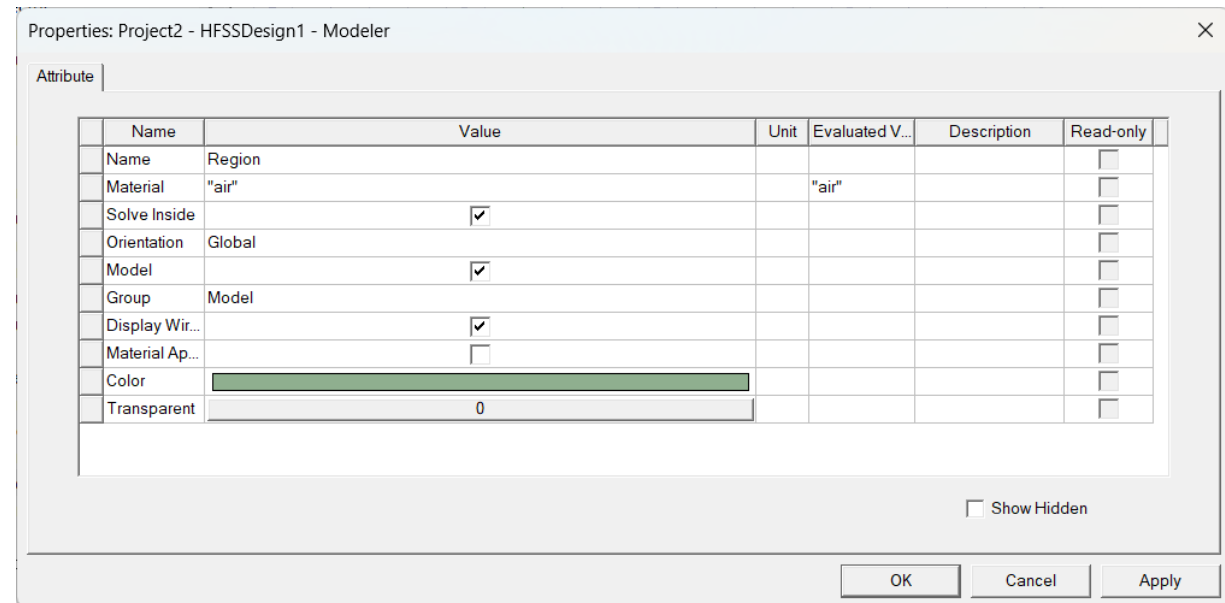
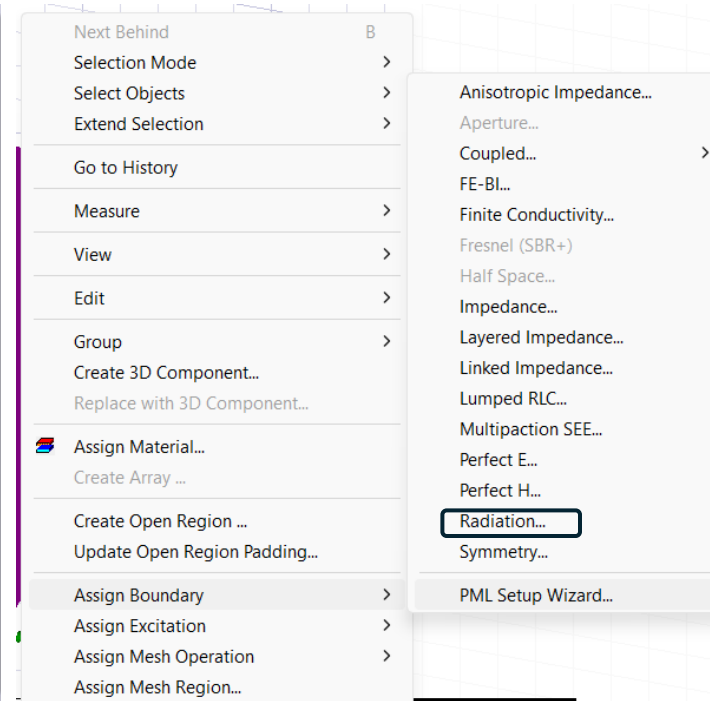
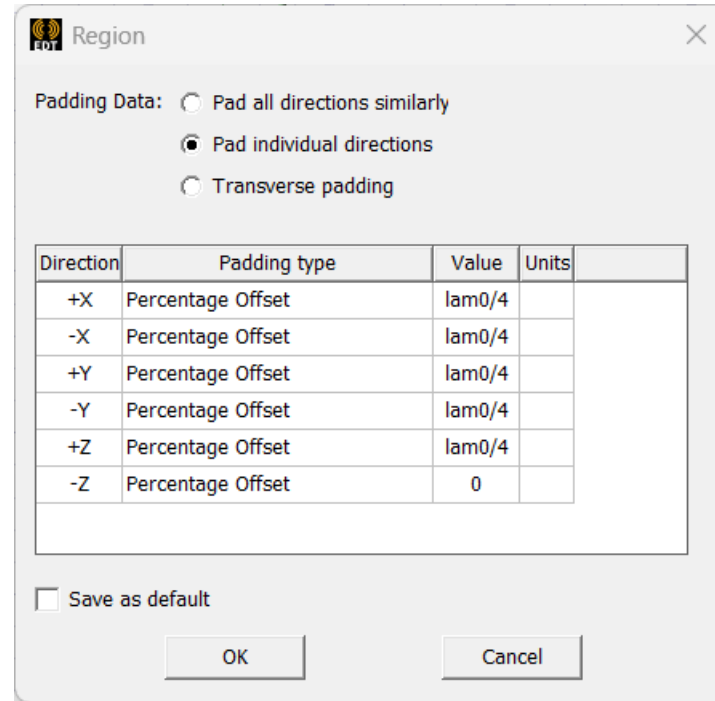
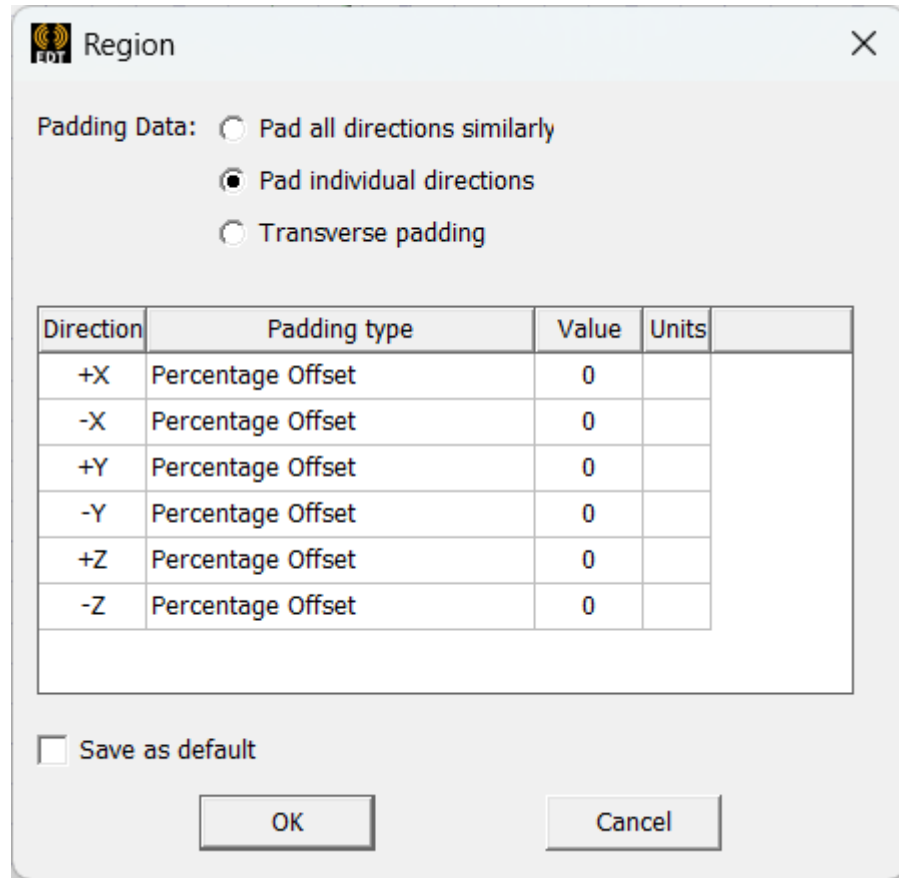


Wave port

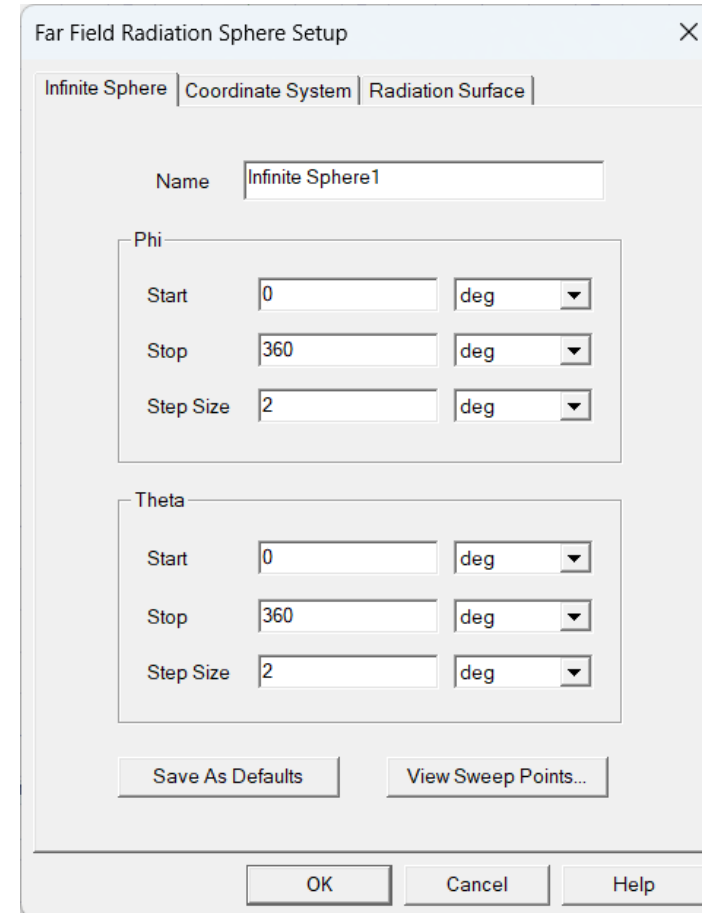
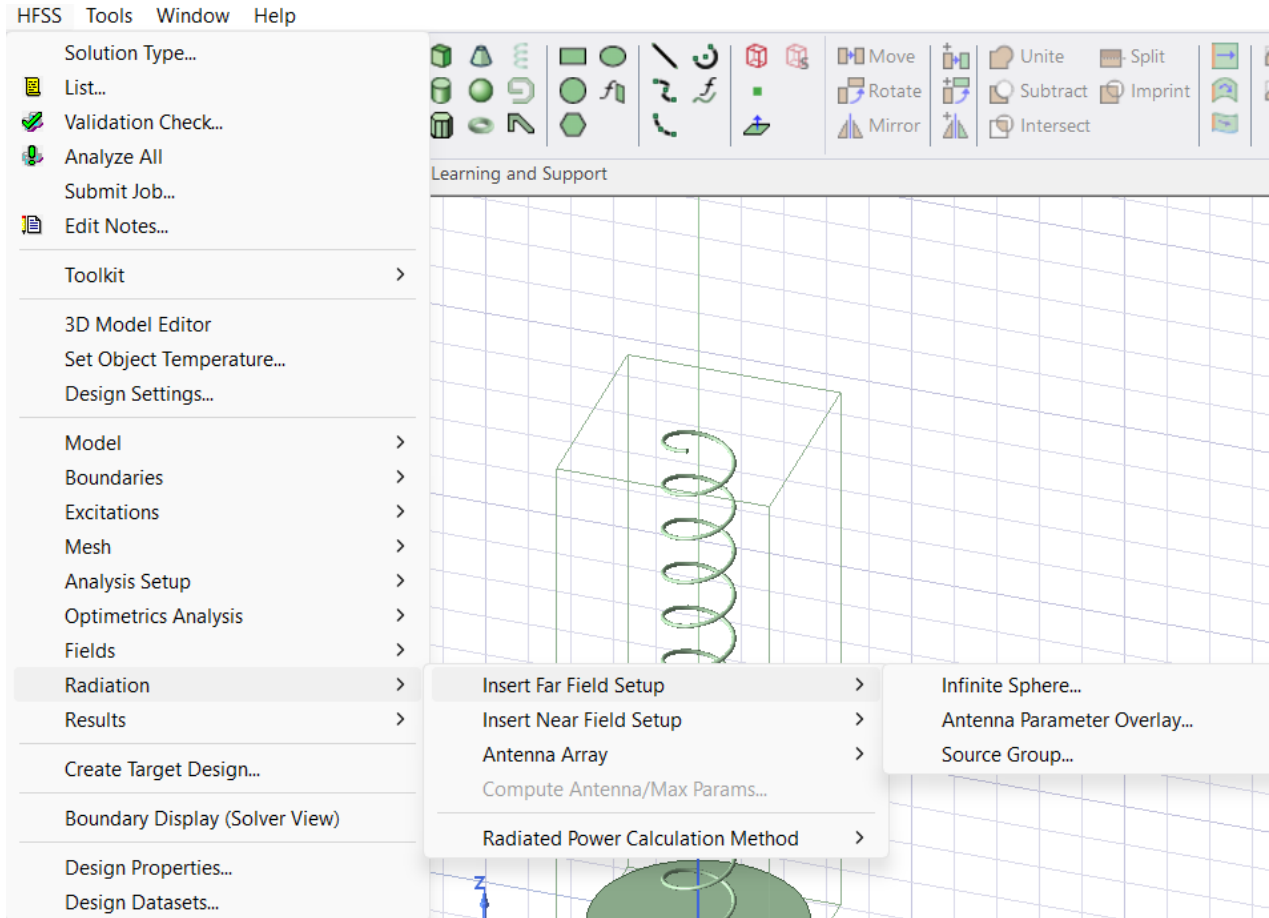
- Cerc
- -Click dreapta in fereastra de lucru Assign port->wave port



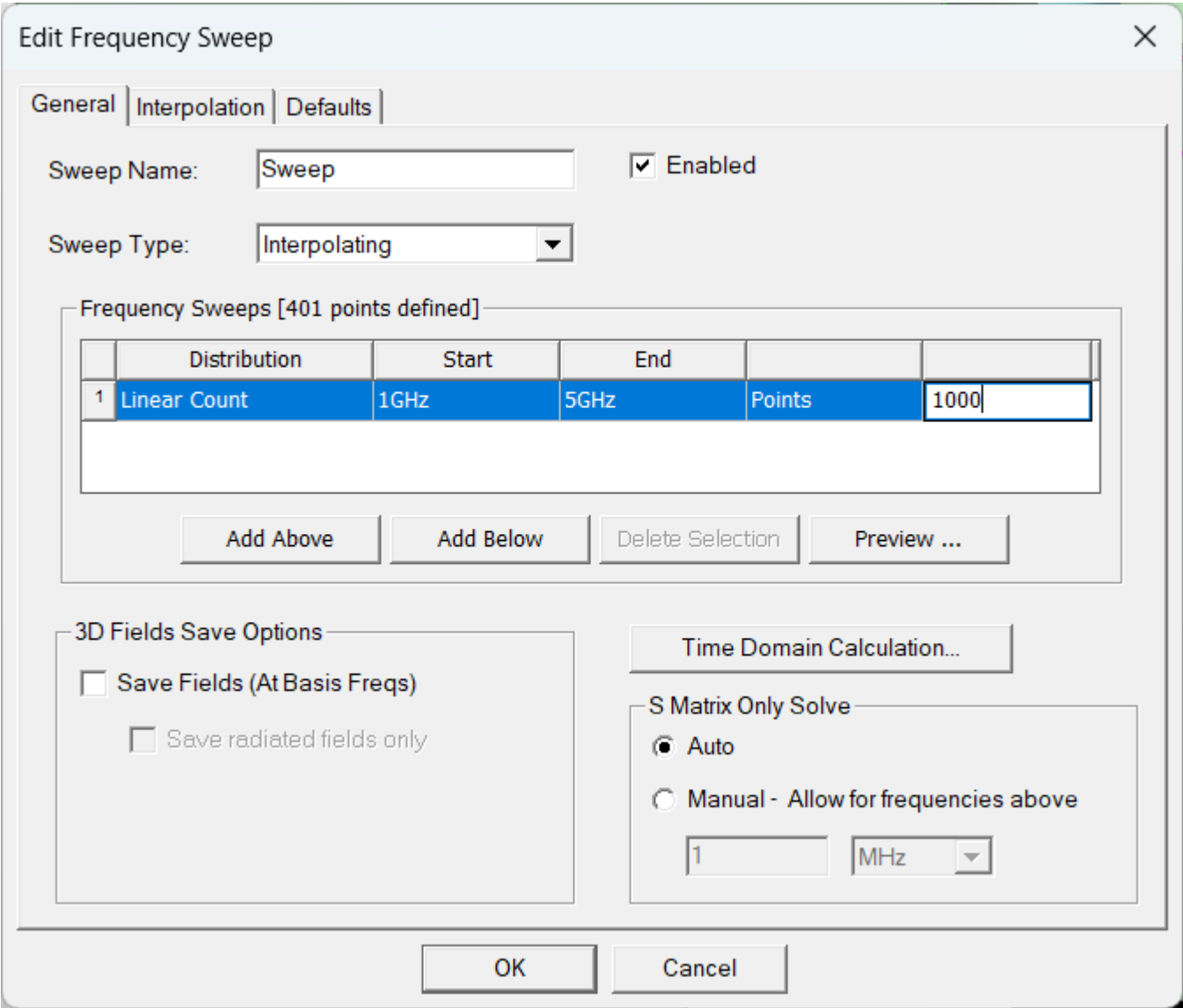
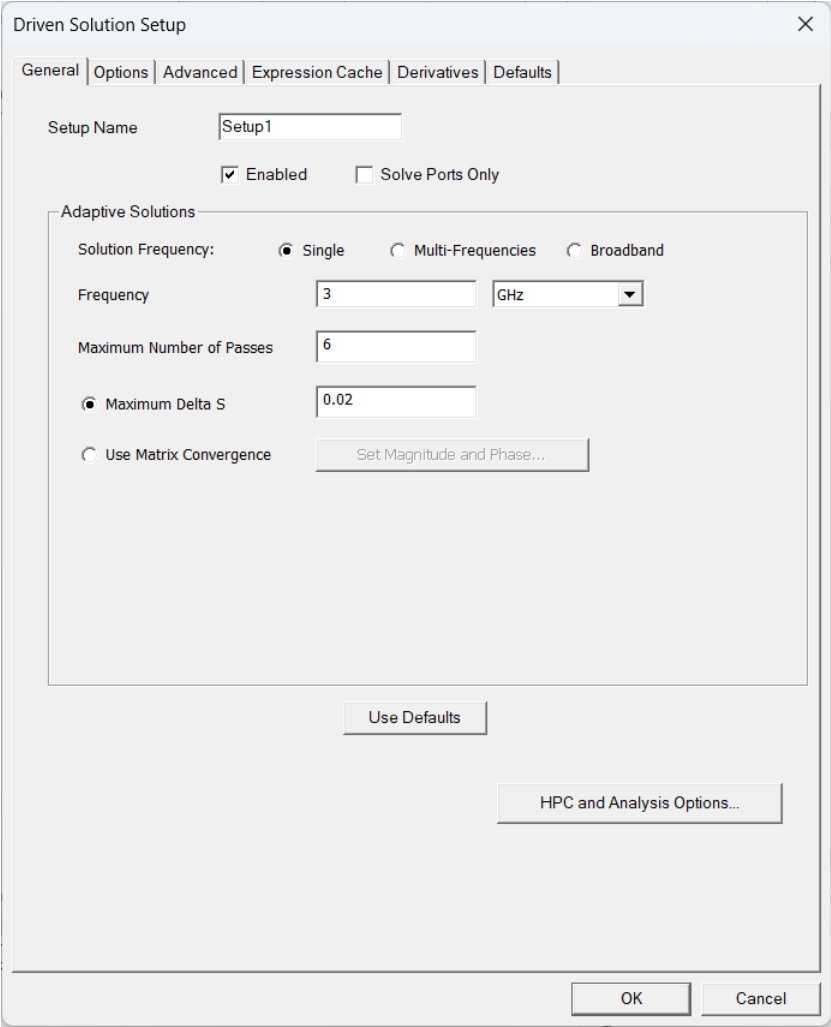
Regiunea



Crearea sferei pentru câmp îndepărtat



Analysis setup



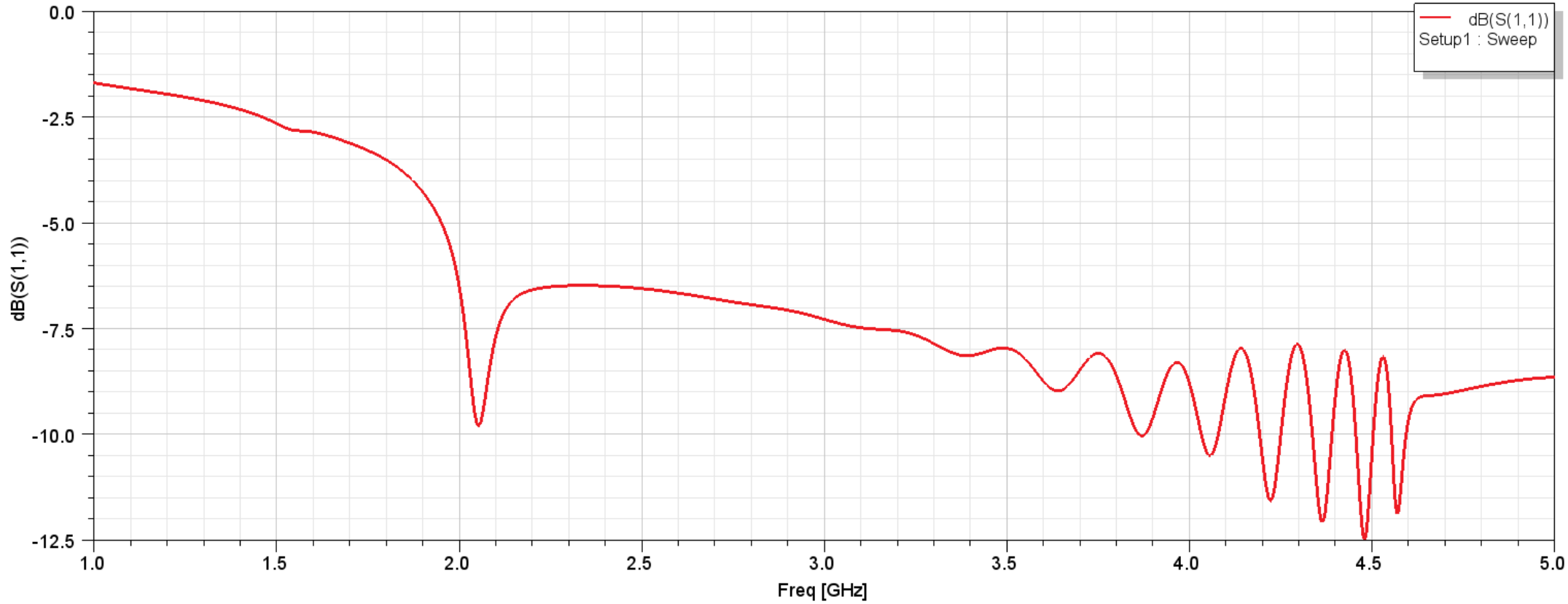
- Parametrii S

- Model
 - Solids
 - air
 - Region
 - Dielectric
 - dielectric
 - pec
 - Circle1
 - coaxial_in
 - coaxial_out
 - ground
 - Sheets
 - Coordinate Systems
 - Planes
 - Lists

S Parameter Plot 1

HFSSDesign1

Ansys
2023 R2



Radiation pattern

Report: Project2 - HFSSDesign1 - Gain Plot 4 - GainTotal

Context

Solution: Setup1 : LastAdaptive

Geometry: Infinite Sphere1

Trace Families Families Display

Primary Sweep: Theta All

Ang: Default Theta

Mag: GainTotal Range Function...

Category: Variables Output Variables Gain System Gain rE Directivity Realized Gain Polarization Ratio Axial Ratio Design

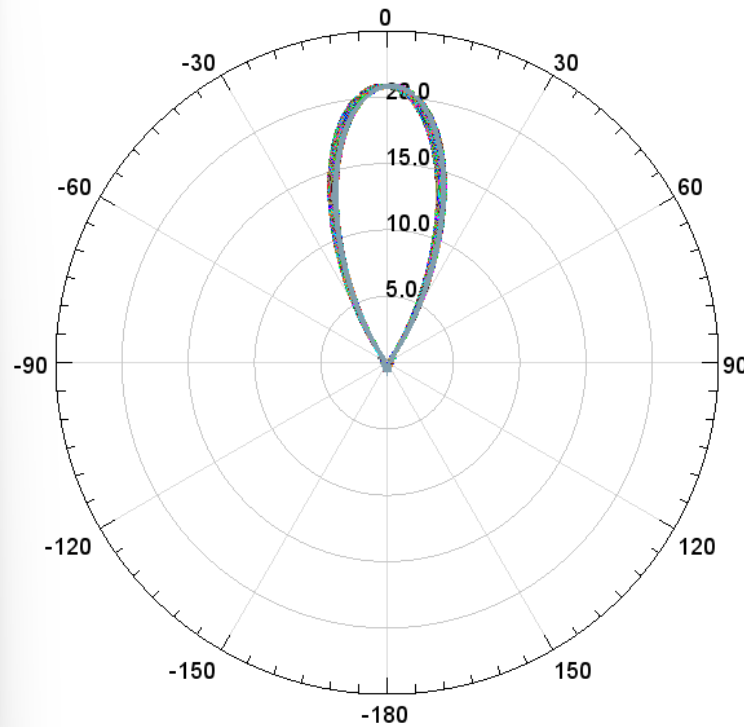
Quantity: GainTotal GainPhi GainTheta GainX GainY GainZ GainLHCP GainRHCP GainL3X GainL3Y GainCoPolar GainCrossPolar

Function: <none> abs acos acosh ang_deg ang_deg_val ang_rad asin asinh atan atanh cos cosh cum_integ cum_sum dB dR10normalize

Update Report

Real time Update

Output Variables... Options... New Report Apply Trace Add Trace Close



HFSSDesign1

2023 R2

- GainTotal Setup1 : LastAdaptive Freq='3GHz' Phi='0deg'
- GainTotal Setup1 : LastAdaptive Freq='3GHz' Phi='2deg'
- GainTotal Setup1 : LastAdaptive Freq='3GHz' Phi='4deg'
- GainTotal Setup1 : LastAdaptive Freq='3GHz' Phi='6deg'
- GainTotal Setup1 : LastAdaptive Freq='3GHz' Phi='8deg'
- GainTotal Setup1 : LastAdaptive Freq='3GHz' Phi='10deg'
- GainTotal Setup1 : LastAdaptive Freq='3GHz' Phi='12deg'

Aplicații

- Modificati numarul de infasurari la 5 si 7 si comparati cu rezultatele anterioare
- Modificati dimensiunea planului de pamantare si observati ce se intampla