

计算电磁学

实验报告

课 程： 计算电磁学
题 目： Probe Feed Patch Antenna
年 级： 大三
专 业： 信息与计算科学
学 号： 15074126
姓 名： 韩益民
指导教师： 赵雷

实验名称：

制作贴片天线实验目的与要求：

实验内容：

制作贴片天线

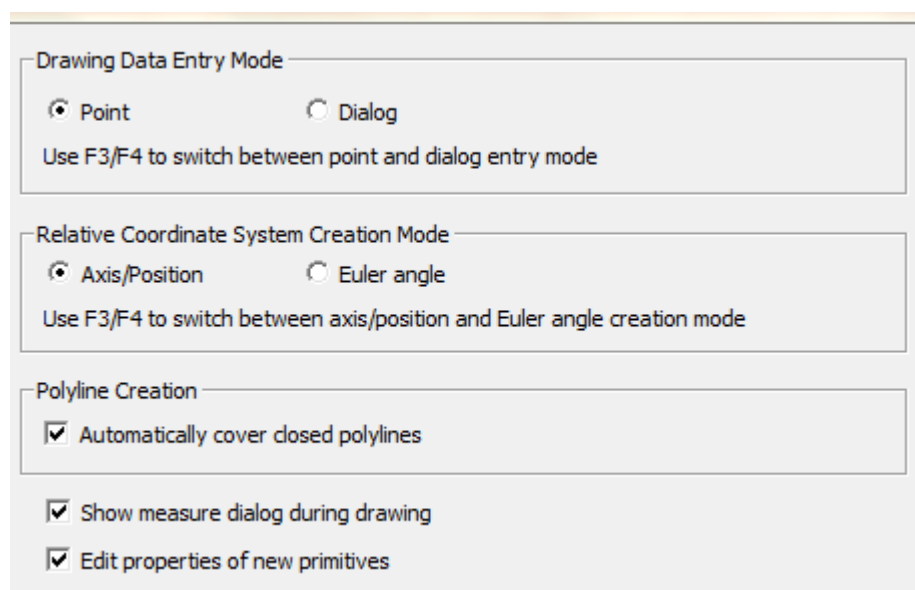
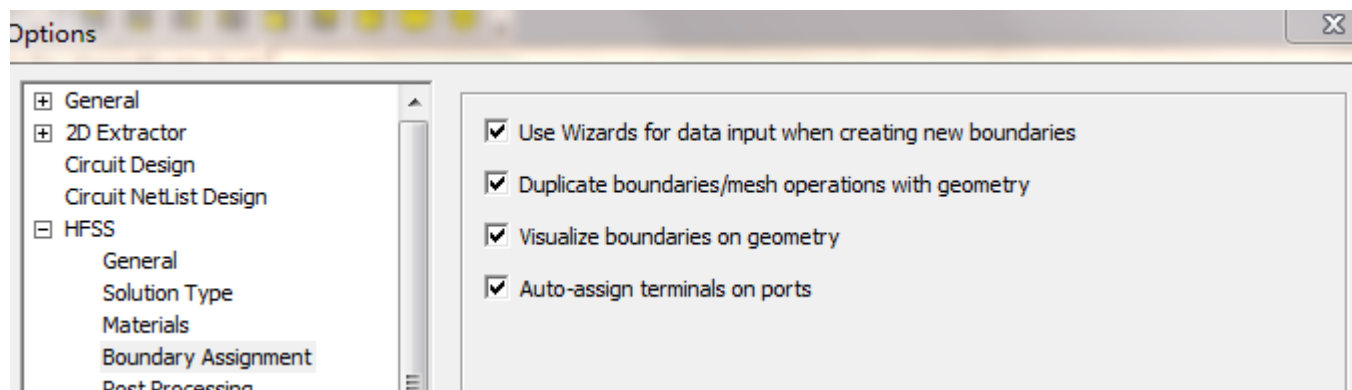
实验环境与器材：

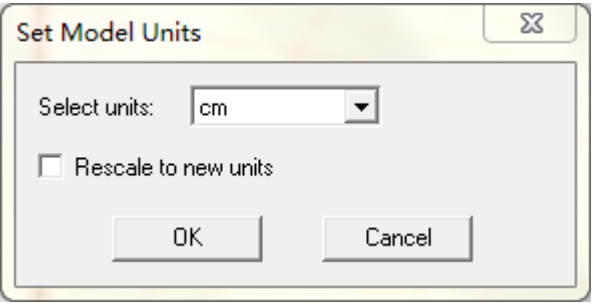
WIN7 + ANSYS Electronics Desktop

实验过程（步骤）或程序代码：

1. 先设置好软件参数 如单位等

参数在 tools 里的一般设置里找到，单位在 molder 里设置



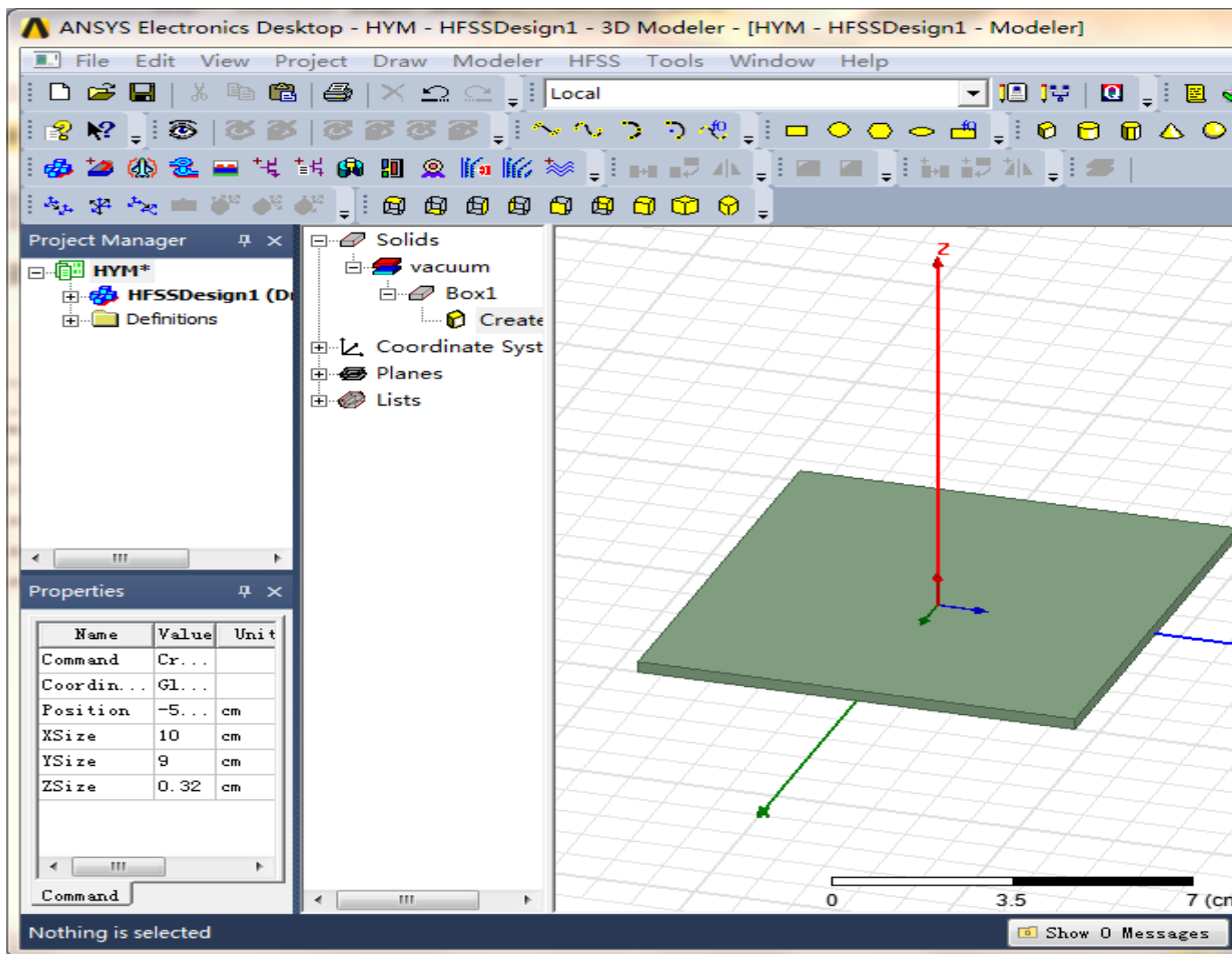


2.画图 包括画盒子 圆柱 矩形 长方体等 会设置其参数

右击眉头工具 DRAW 可以绘制不同的物体 然后改变名字和材料参数


(1) 盒子

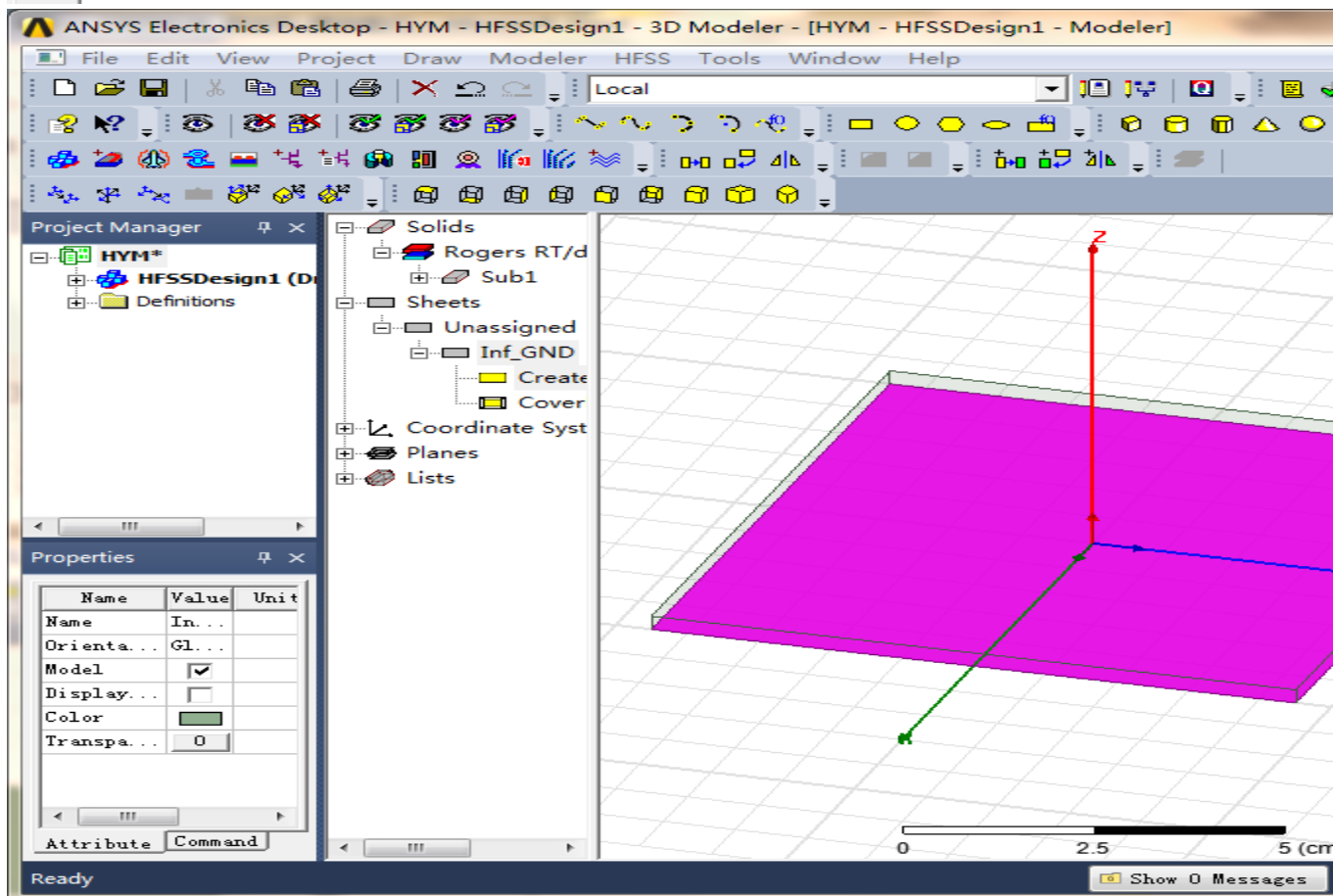
Command					
	Name	Value	Unit	Evaluated V...	Description
	Command	CreateBox			
	Coordinate...	Global			
	Position	-5 ,-4.5 ,0	cm	-5cm , -4.5...	
	XSize	10	cm	10cm	
	YSize	9	cm	9cm	
	ZSize	0.32	cm	0.32cm	



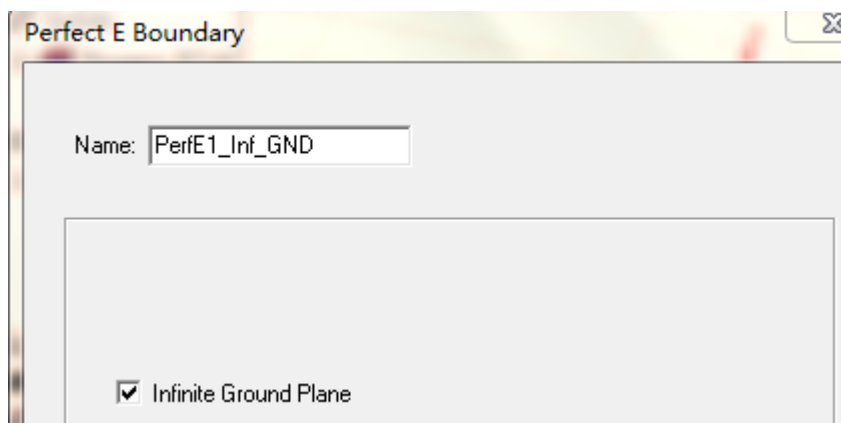
Attribute				
	Name	Value	Unit	Evaluated V...
	Name	Sub1		
	Material	"Rogers RT/duroid 5880 (tm)"		"Rogers RT/...
	Solve Inside	<input checked="" type="checkbox"/>		
	Orientation	Global		
	Model	<input checked="" type="checkbox"/>		
	Display Wi...	<input type="checkbox"/>		
	Color	<div></div>		
	Transparent	0		

(2). 长方形

Command Attribute			
	Name	Value	Unit
	Name	Inf_GND	
	Orientation	Global	
	Model	<input checked="" type="checkbox"/>	
	Display Wi...	<input type="checkbox"/>	
	Color		
	Transparent	0	



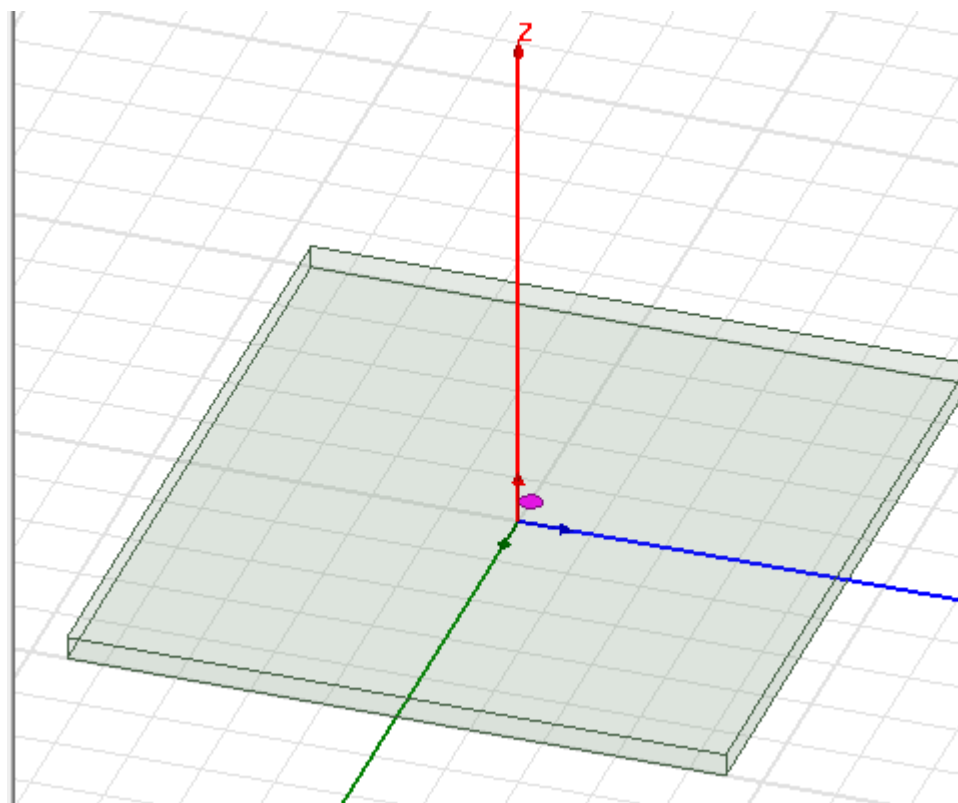
3. 会设置边界



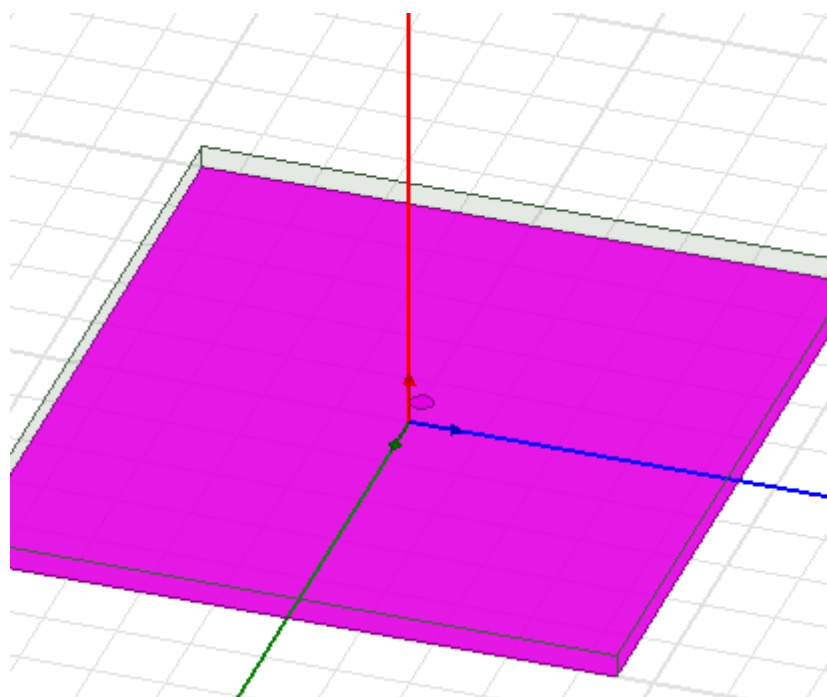
画圆柱体

Command		Attribute
	Name	Value
	Command	CreateCircle
	Coordinate...	Global
	Center Pos...	-0.5 , 0 , 0
	Axis	Z
	Radius	0.16
	Number of ...	0

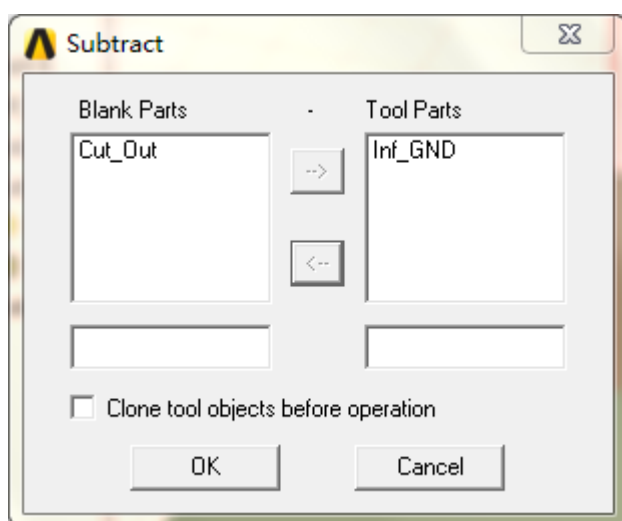
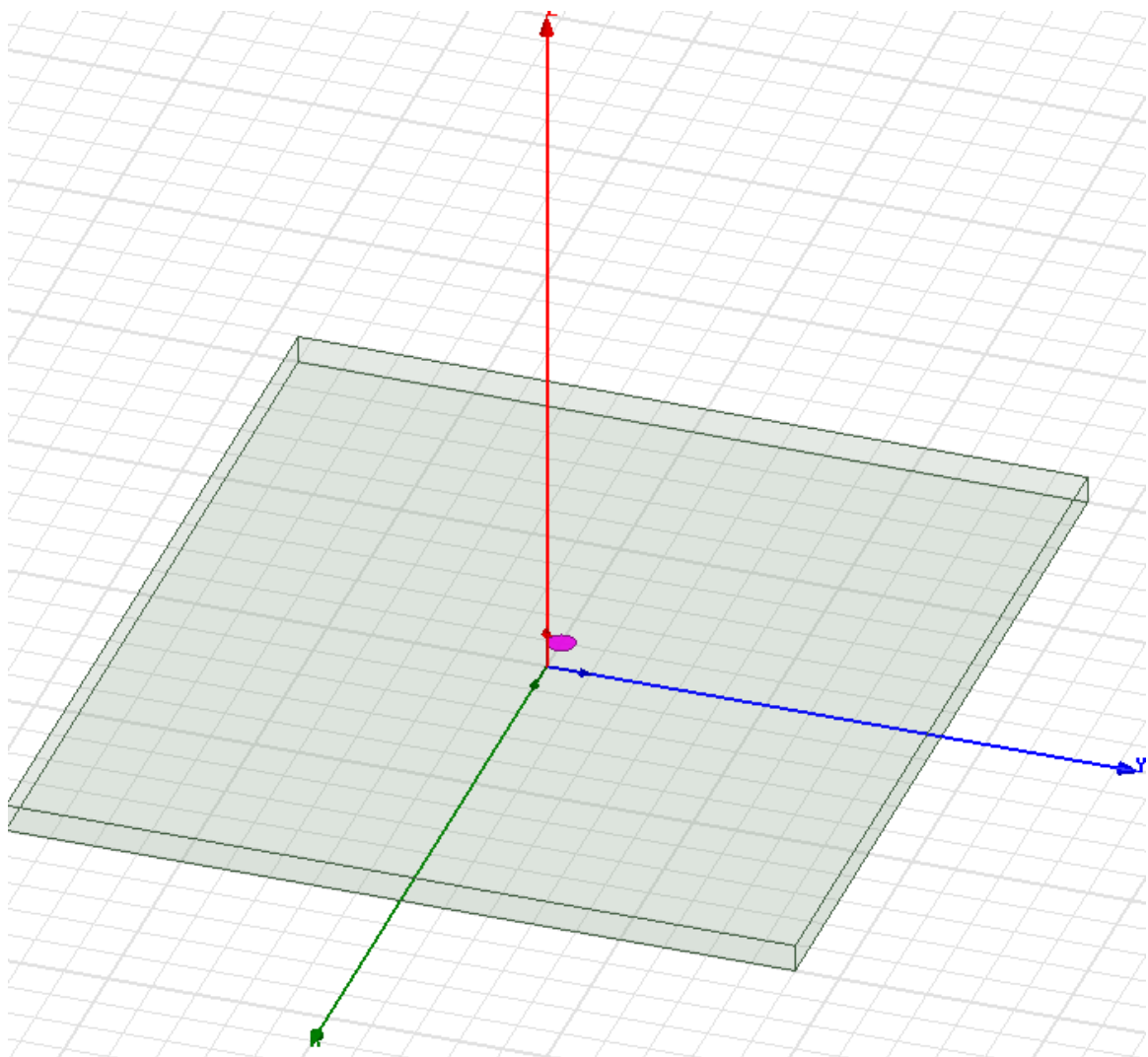
	Name	Value
	Name	Cut_Out



Complete the Infinite Ground

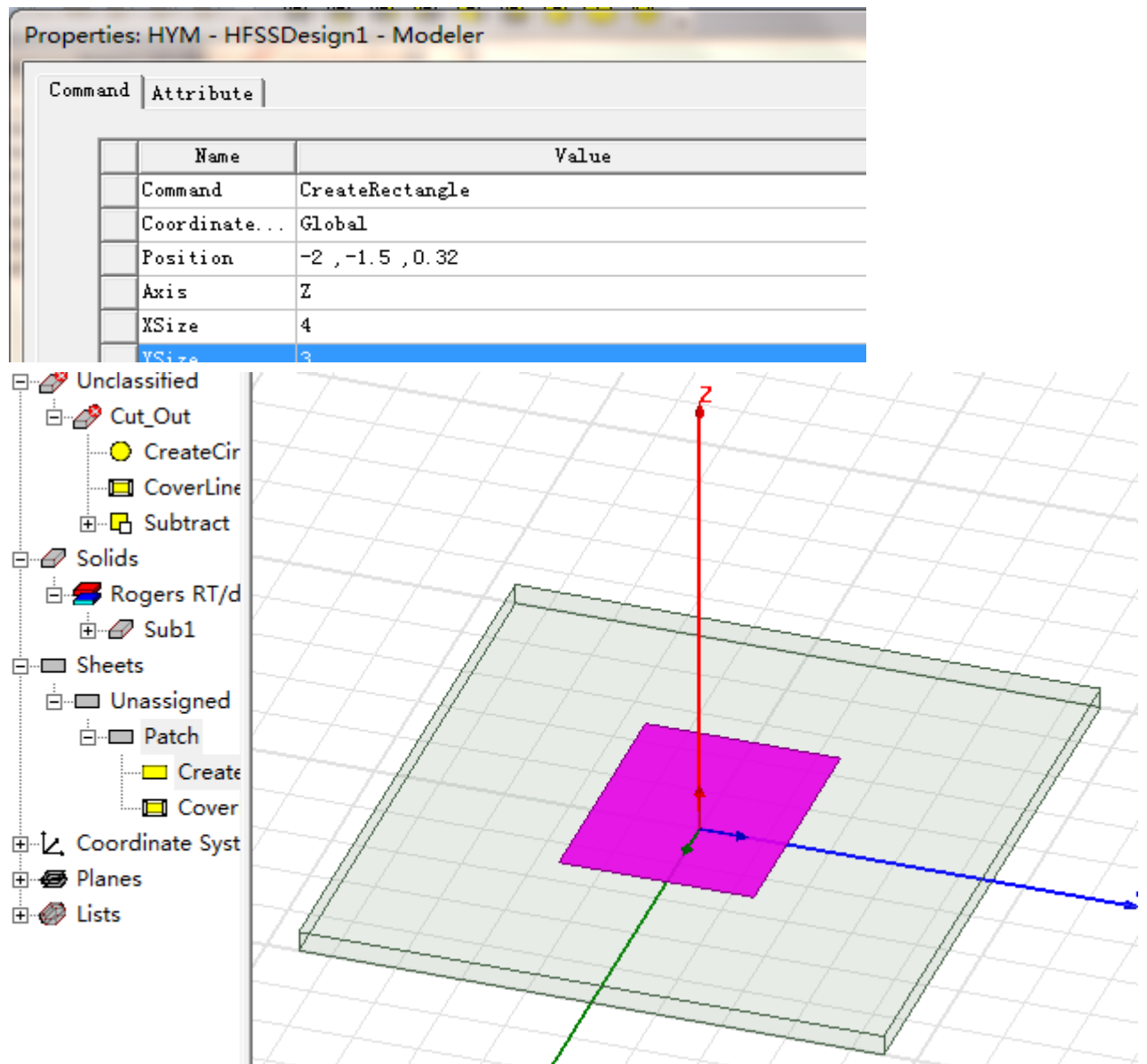


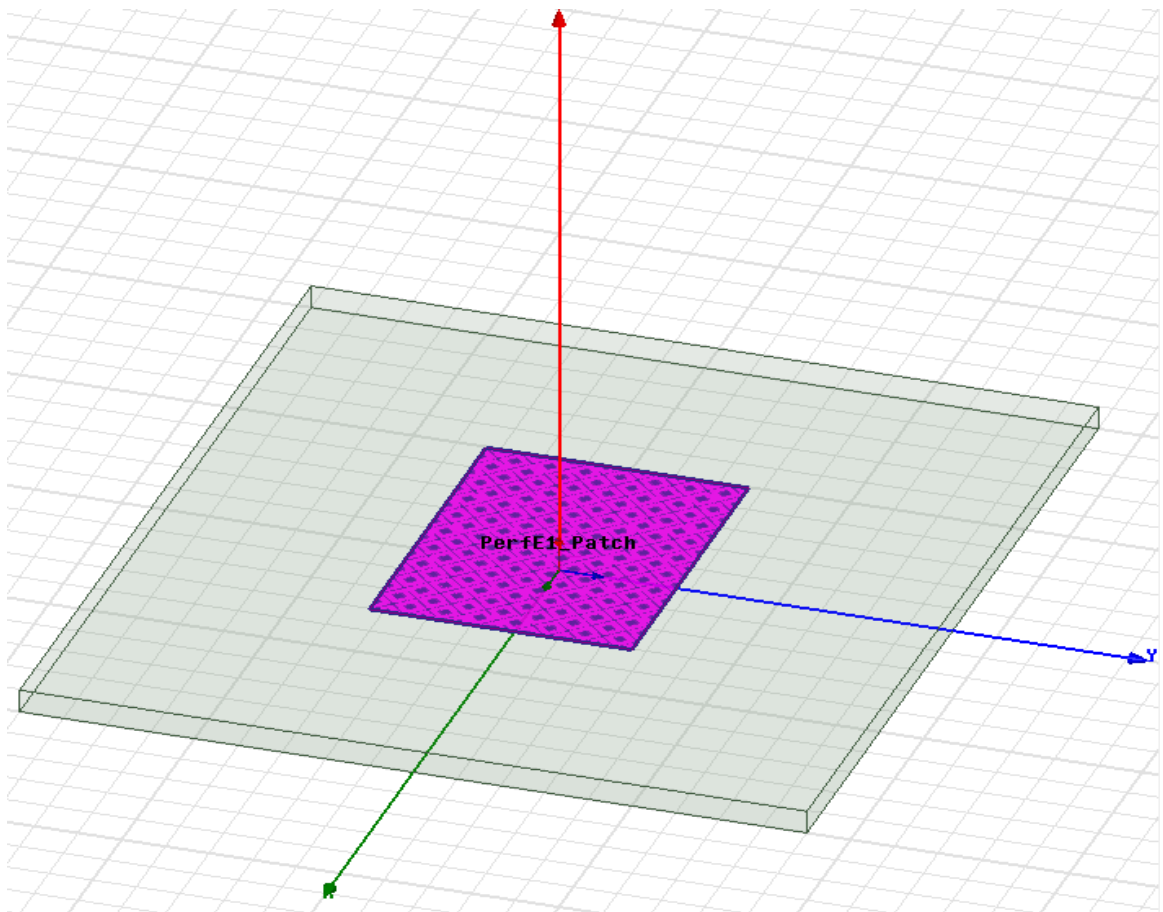
4. 切出圆形孔



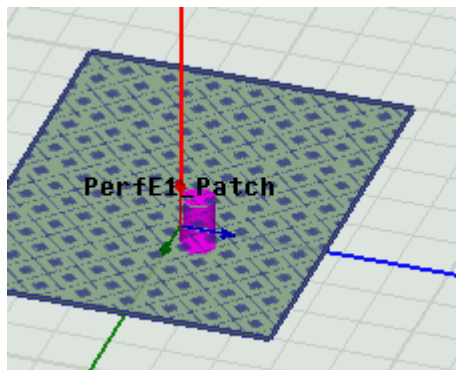
5.制作天线切片 并且加上天线

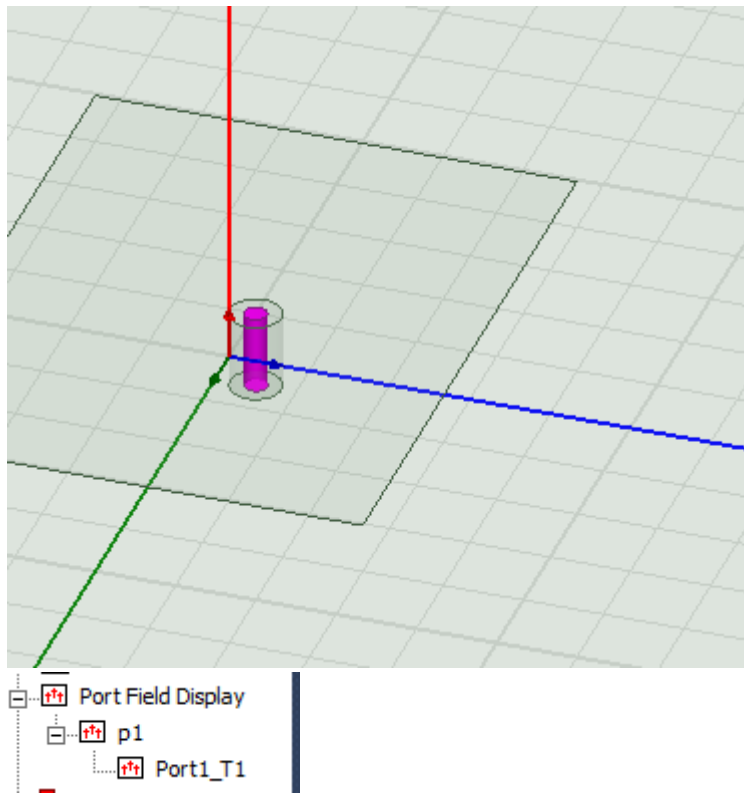
Create the Patch 然后加边界



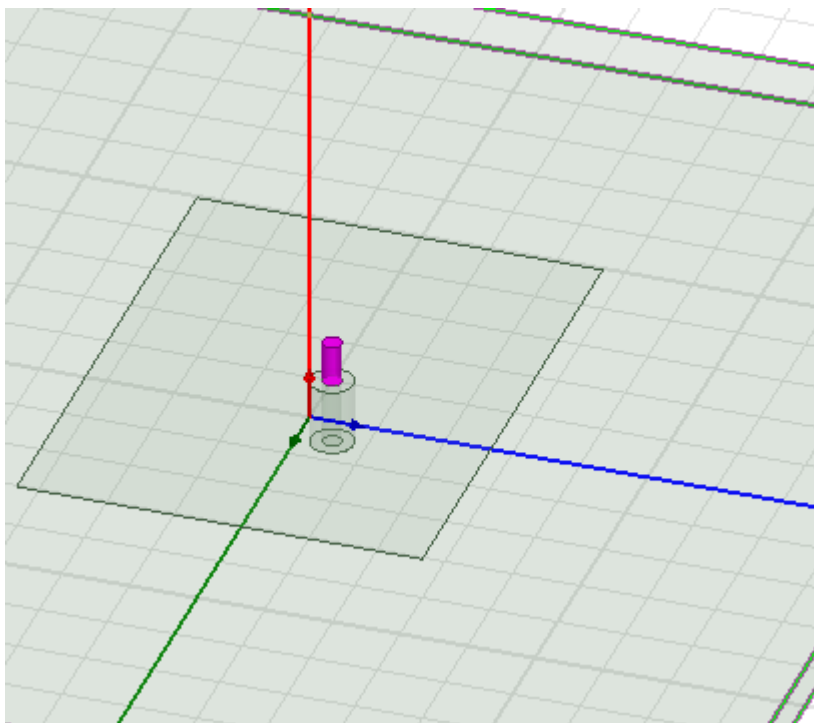


绘制圆柱天线

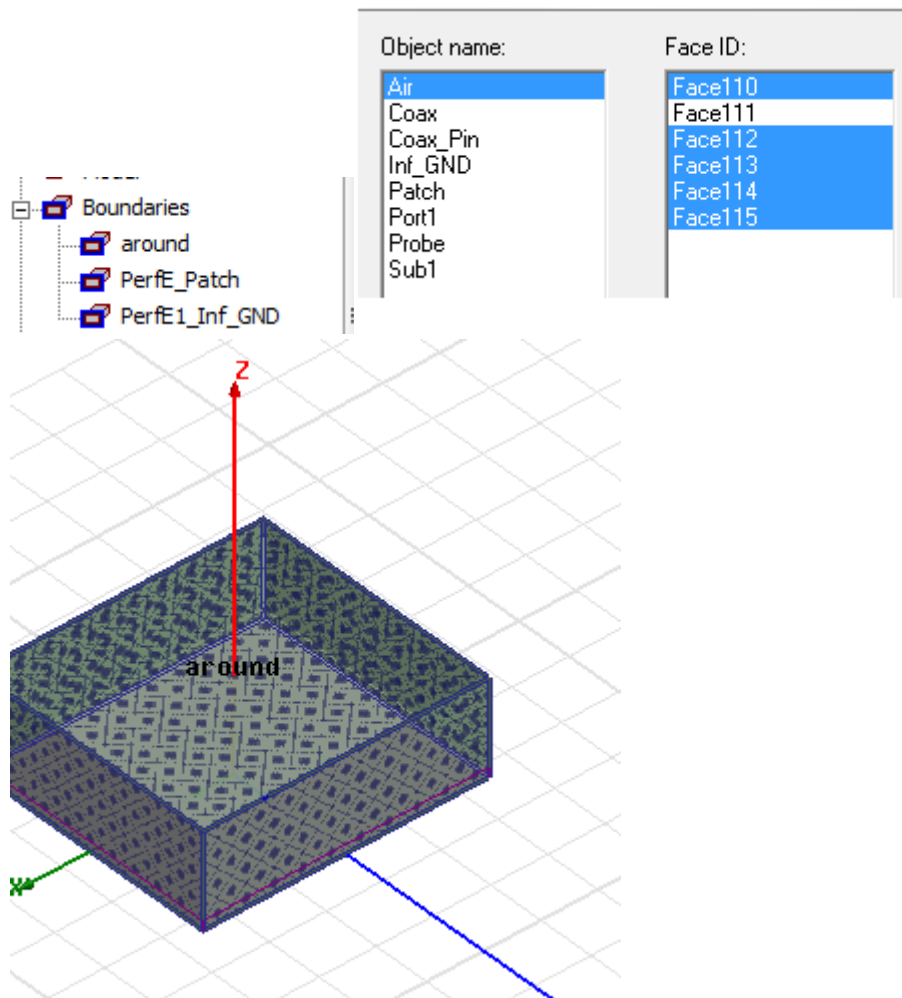




Create the Probe



Create Air 空气盒子



实验结果与分析：

模型分析

先点击 HFSS 然后 check 是否有错误

如果没有错误可以在 project 里点击 analysis 进行分析

在 results 里可以看见分析的结果。

Driven Solution Setup ✕

General | Options | Advanced | Expression Cache | Derivatives | Defaults

Setup Name:

☒ Enabled

Solution Frequency: GHz

Adaptive Solutions

Maximum Number of

Maximum Delta Energy:

Edit Frequency Sweep ✕

General | Defaults

Sweep Name: ☒ Enabled

Sweep Type: Fast

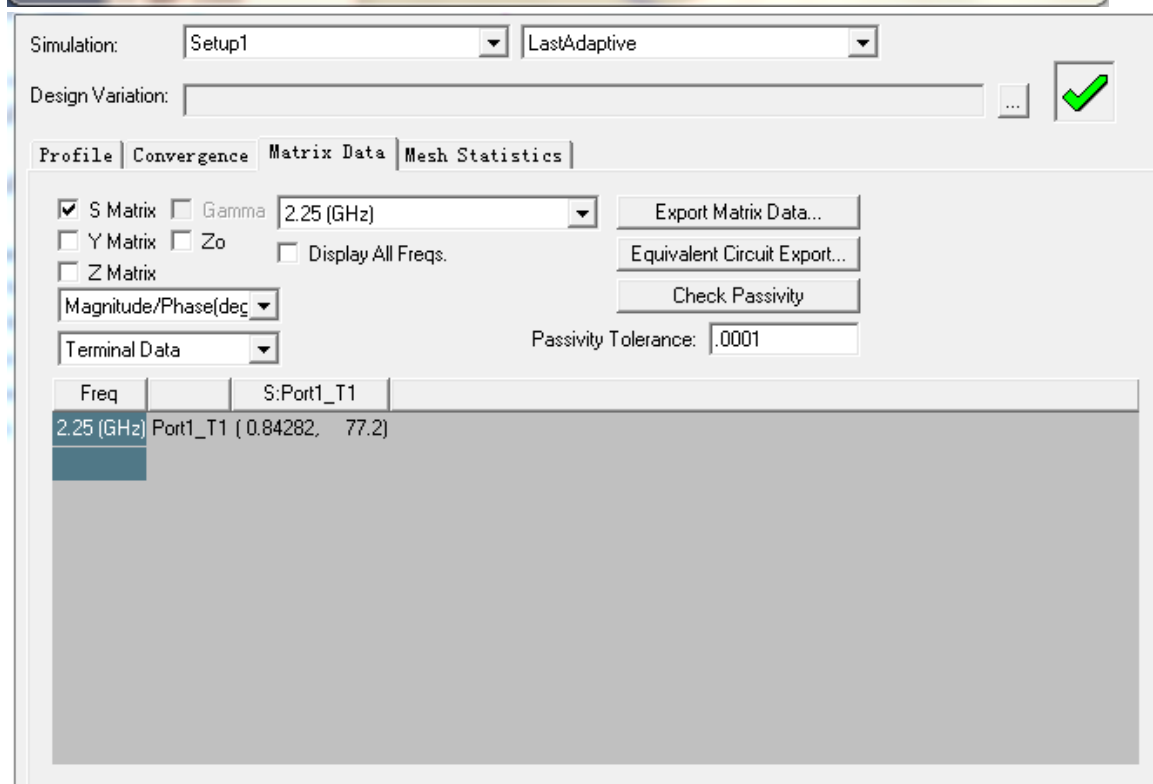
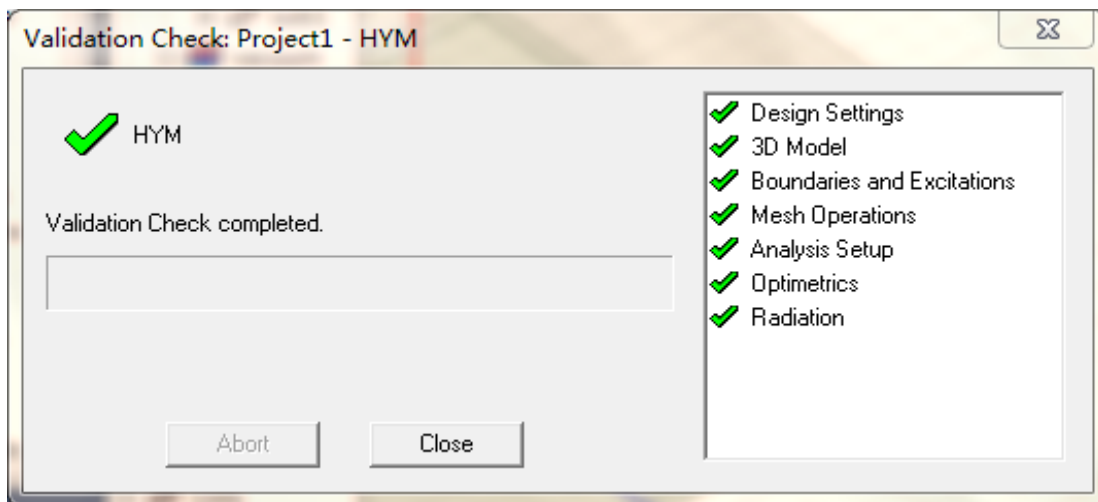
Frequency Sweeps [91 points defined]

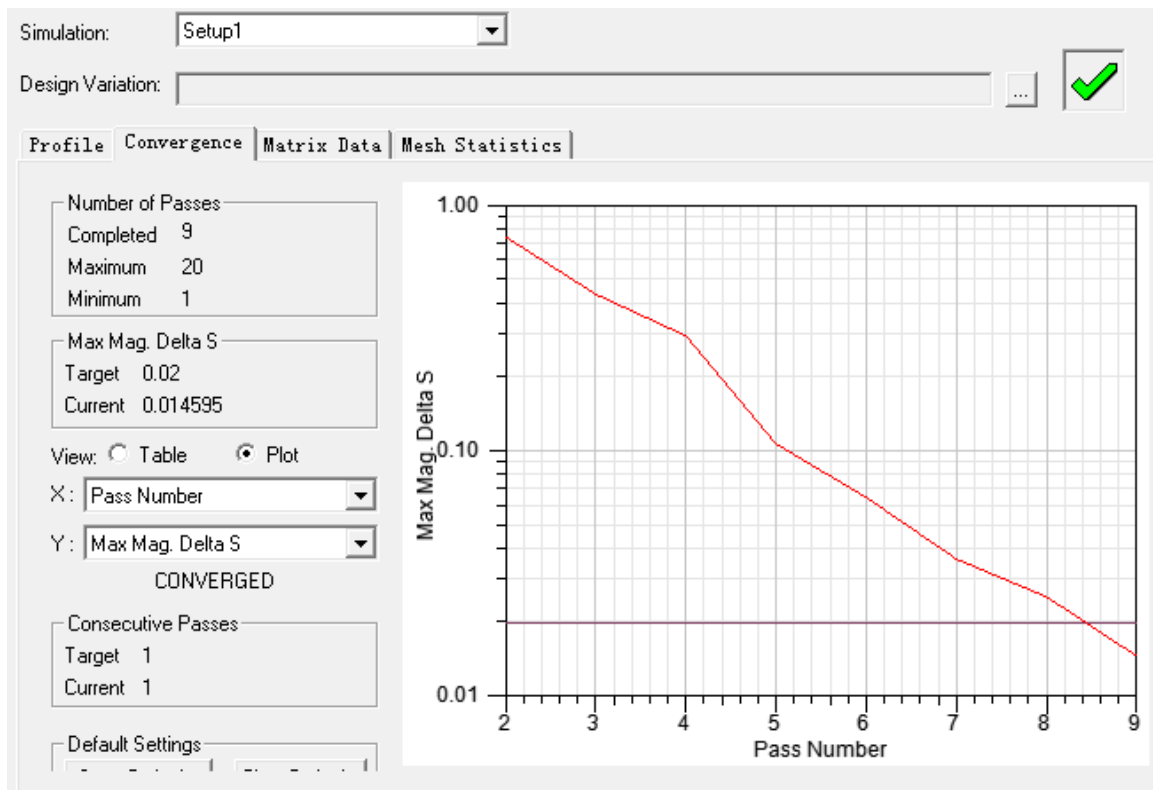
	Distribution	Start	End		
1	Linear Step	1GHz	10GHz	Step size	0.1GHz

3D Fields Save Options


☒ Save Fields

☐ Save radiated fields only
generate fields at
solve time (All
Frequencies)





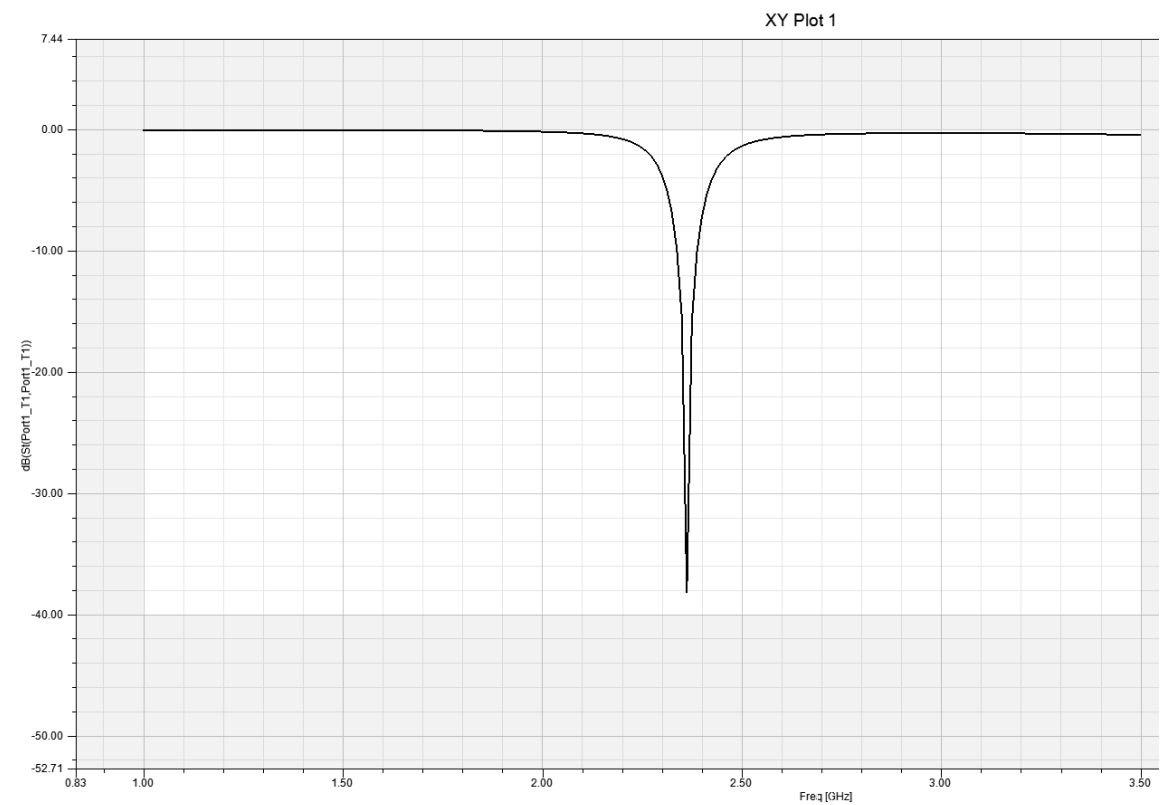
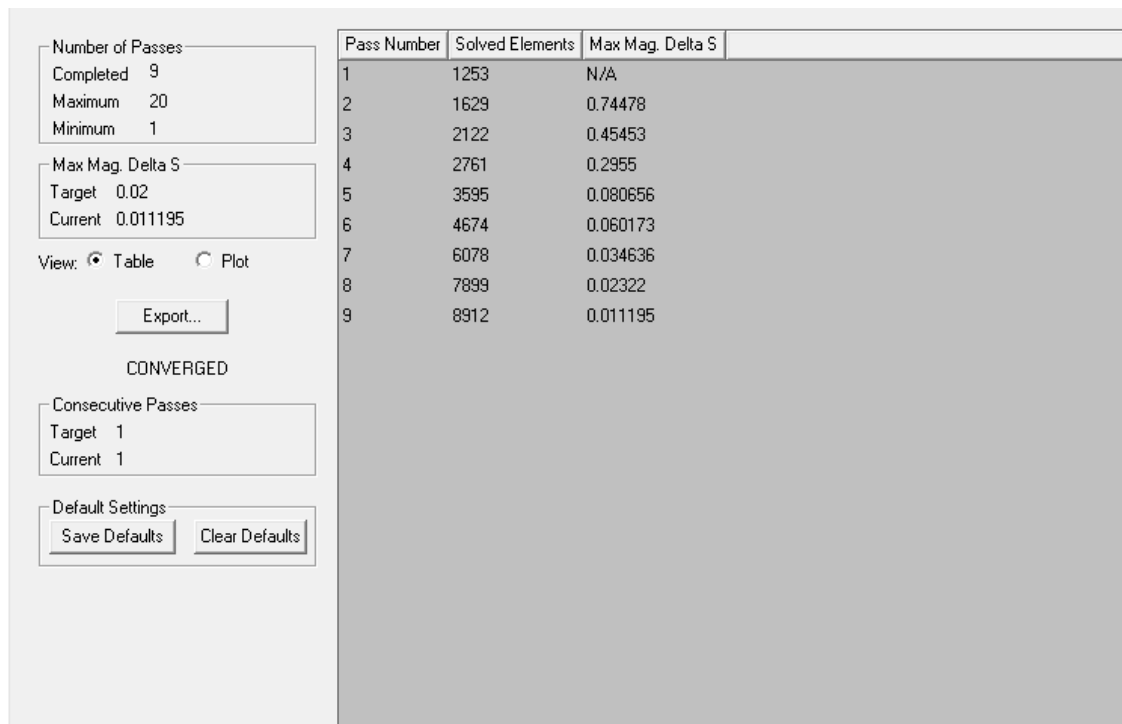
Simulation: Setup1

Design Variation: 

Profile | **Convergence** | Matrix Data | Mesh Statistics

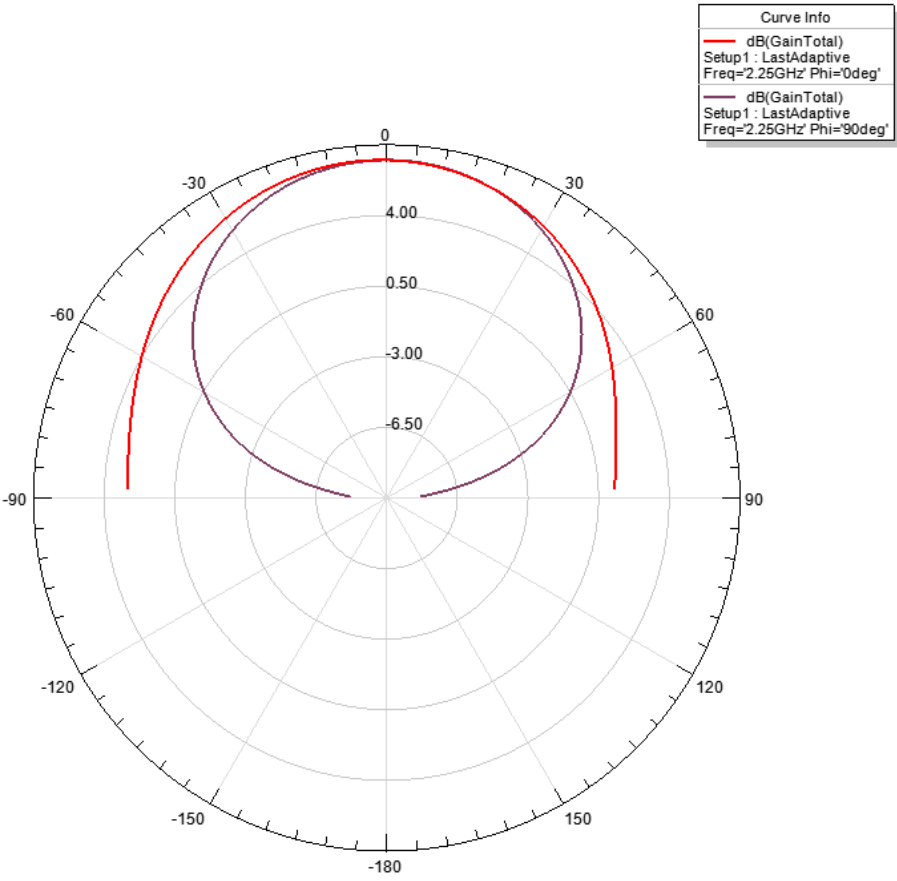
Task	Real Time	CPU Time	Memory	Information
Adaptive Process				Elapsed time : 00:01:38 , Hfss ComEngine Memory : 48.7 M
Total	00:00:41	00:00:11		Time: 03/04/2018 15:16:42, Status: Normal Completion
Start				Time: 03/04/2018 15:16:42; Host: LAPTOP-31QJ68QJ; Processor: 4; OS: NT
RAM Limit				Executing from C:\Program Files\AnsysEM\AnsysEM17.1\win64\HFSSCOMEN LAPTOP-31QJ68QJ = 90.000000%
				Solution Basis Order: 1
Solution Sweep				Fast Sweep
				From 1 GHz to 3.5 GHz, 200 Steps
Simulation Setup	00:00:00	00:00:00	36.9 M	Disk = 0 KBytes
Matrix Assembly	00:00:01	00:00:01	109 M	Disk = 0 KBytes, 8912 tetrahedra , p1: 98 triangles
Solver DCS1	00:00:07	00:00:07	317 M	Disk = 16645 KBytes, matrix size 52885 , matrix bandwidth 20.2 , reduced matri
Field Recovery	00:00:00	00:00:00	317 M	Disk = 44 KBytes, 1 excitations
Solution Process				Elapsed time : 00:00:11 , Hfss ComEngine Memory : 48.7 M
Total	00:00:08	00:00:08		Time: 03/04/2018 15:16:54, Status: Normal Completion

Export...



Radiation Pattern 1

HFSSDesign1



成 绩:

教师签名:

月 日