HFSS-RCS仿真方法

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电子产品工业软件研究中心
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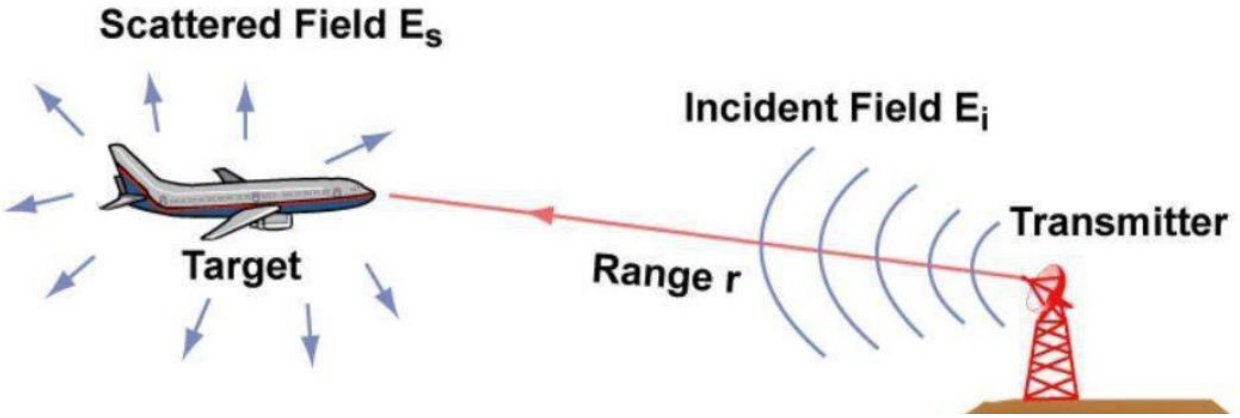
RCS（Radar Cross Section）

简　　介

RCS简介

RSC是目标在雷达接收方向上反射雷达信号能力的度量，一个目标的RCS等于单位立体角目标在雷达接收天线方向上反射的功率(每单独立体角)与入射到目标处的功率密度(每平方米)之比。



$$\sigma = \lim_{R\to\infty} 4\pi R^2 \frac{|E_S|^2}{|E_0|^2}$$

RSC单站：辐射源与接收机位于同一点

RSC双站：散射方向不指向辐射源

学习目的：

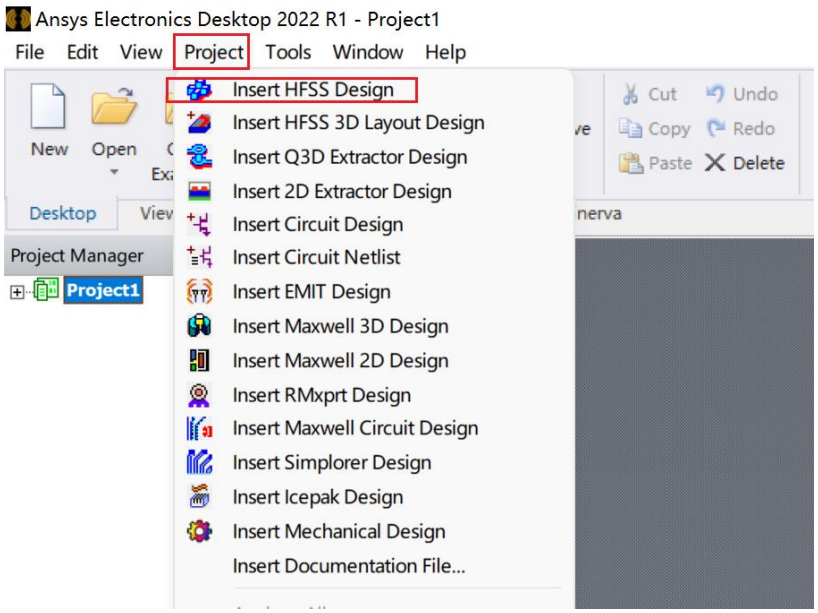
(1)边界、激励、求解设置

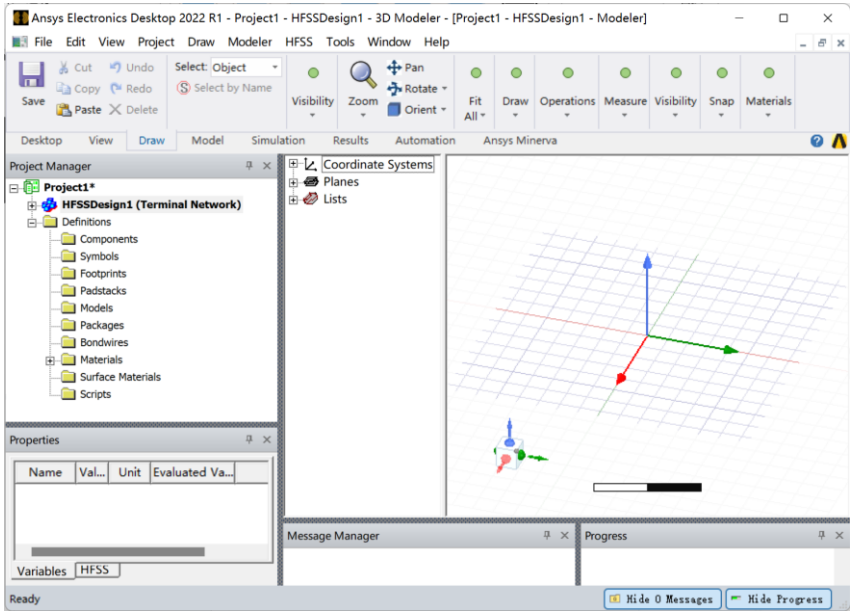
(2)查看后处理结果

HFSS RCS单站仿真方法

HFSS RCS单站仿真方法

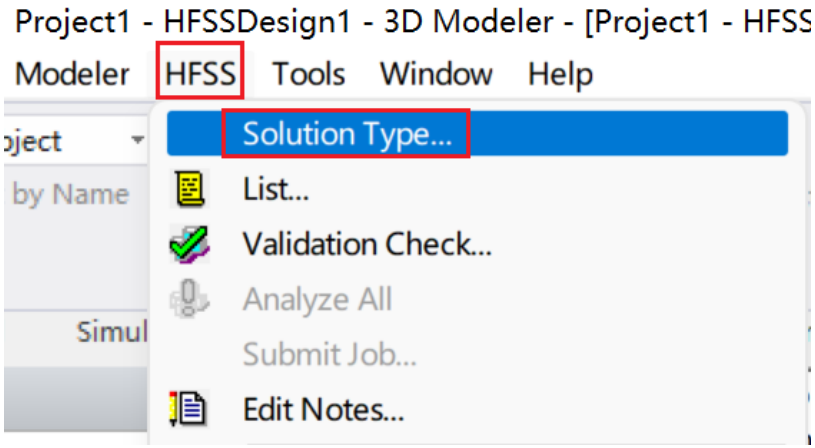
——创建工程

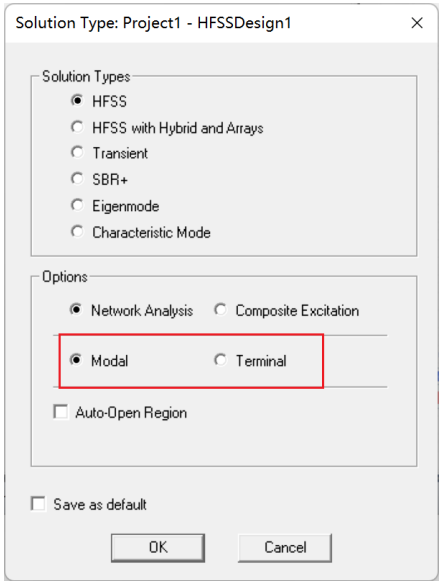




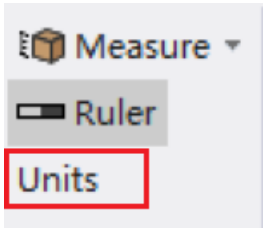
HFSS RCS单站仿真方法
——创建工程

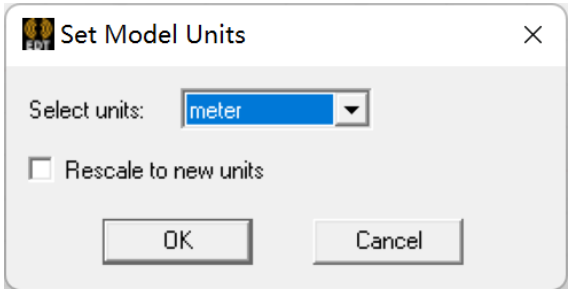
修改求解类型



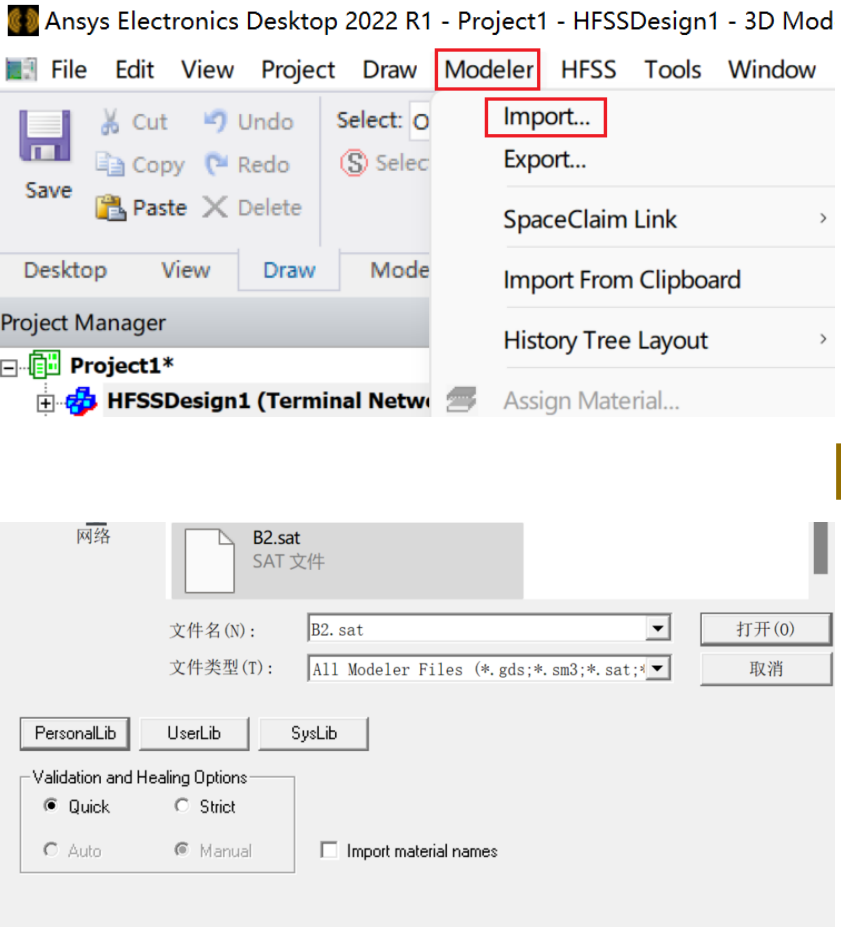


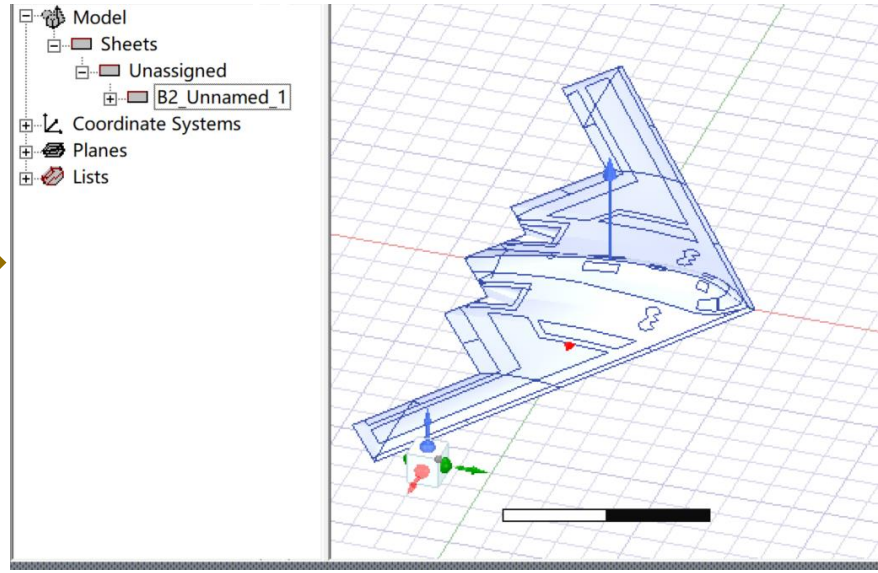
在工具栏点击Units并根据实际情况修改单位





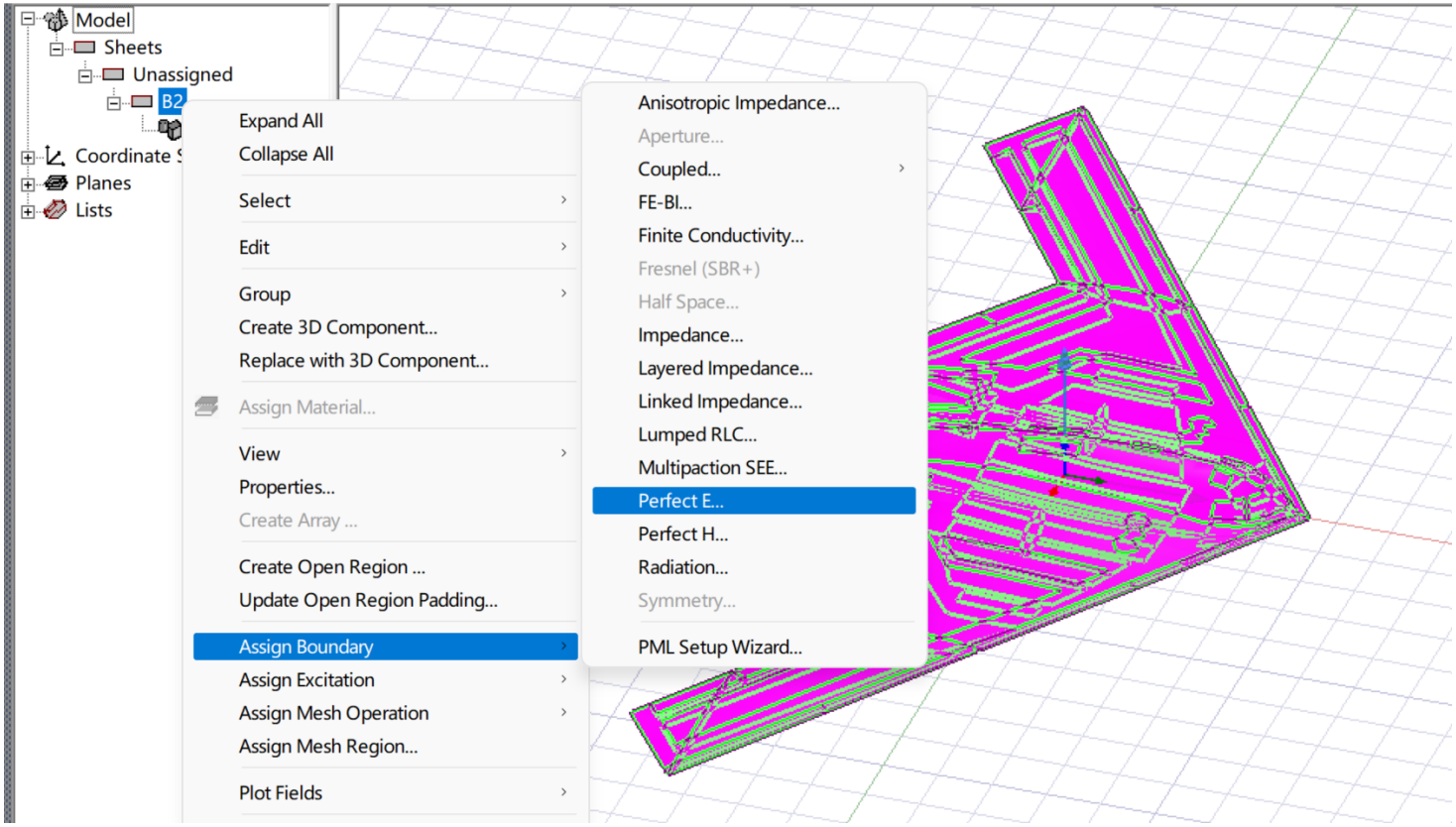
HFSS RCS单站仿真方法
——导入模型





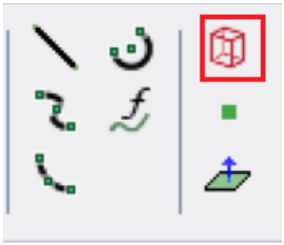
HFSS RCS单站仿真方法
——设置边界

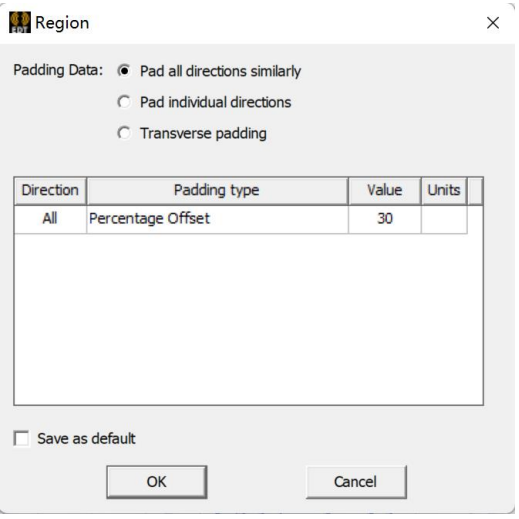
将Sheets下的B2设置为理想电边界
若Model下有Solids，需将对应部分进行材料设置

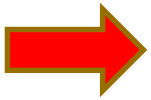


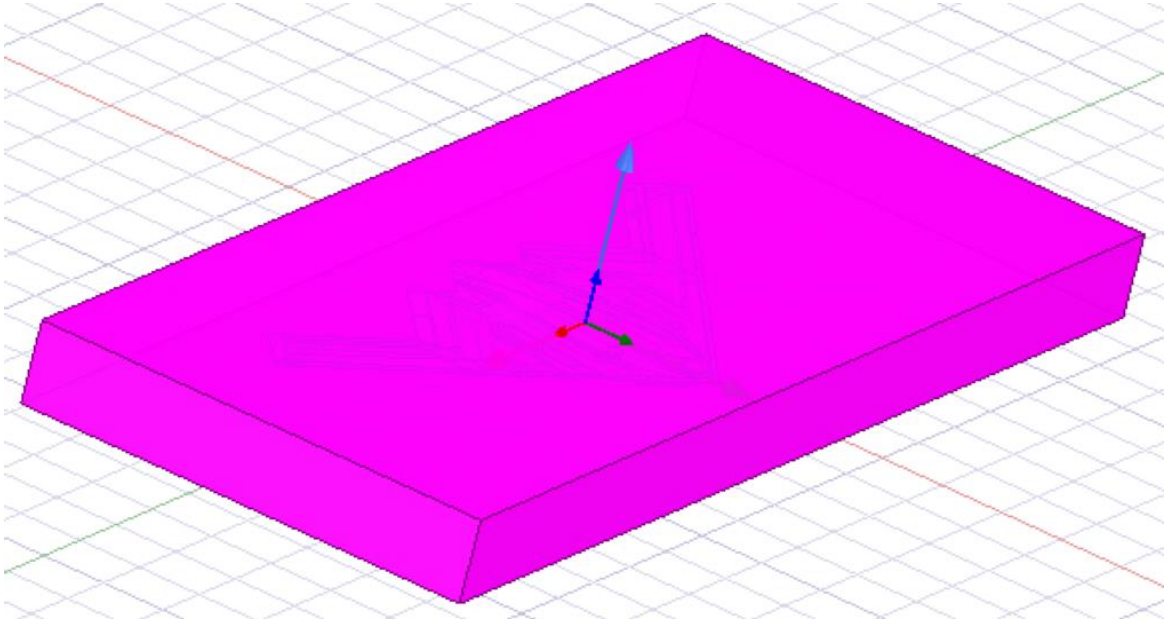
HFSS RCS单站仿真方法
——设置边界

点击工具栏中的create region，也可在Draw选项卡中找到



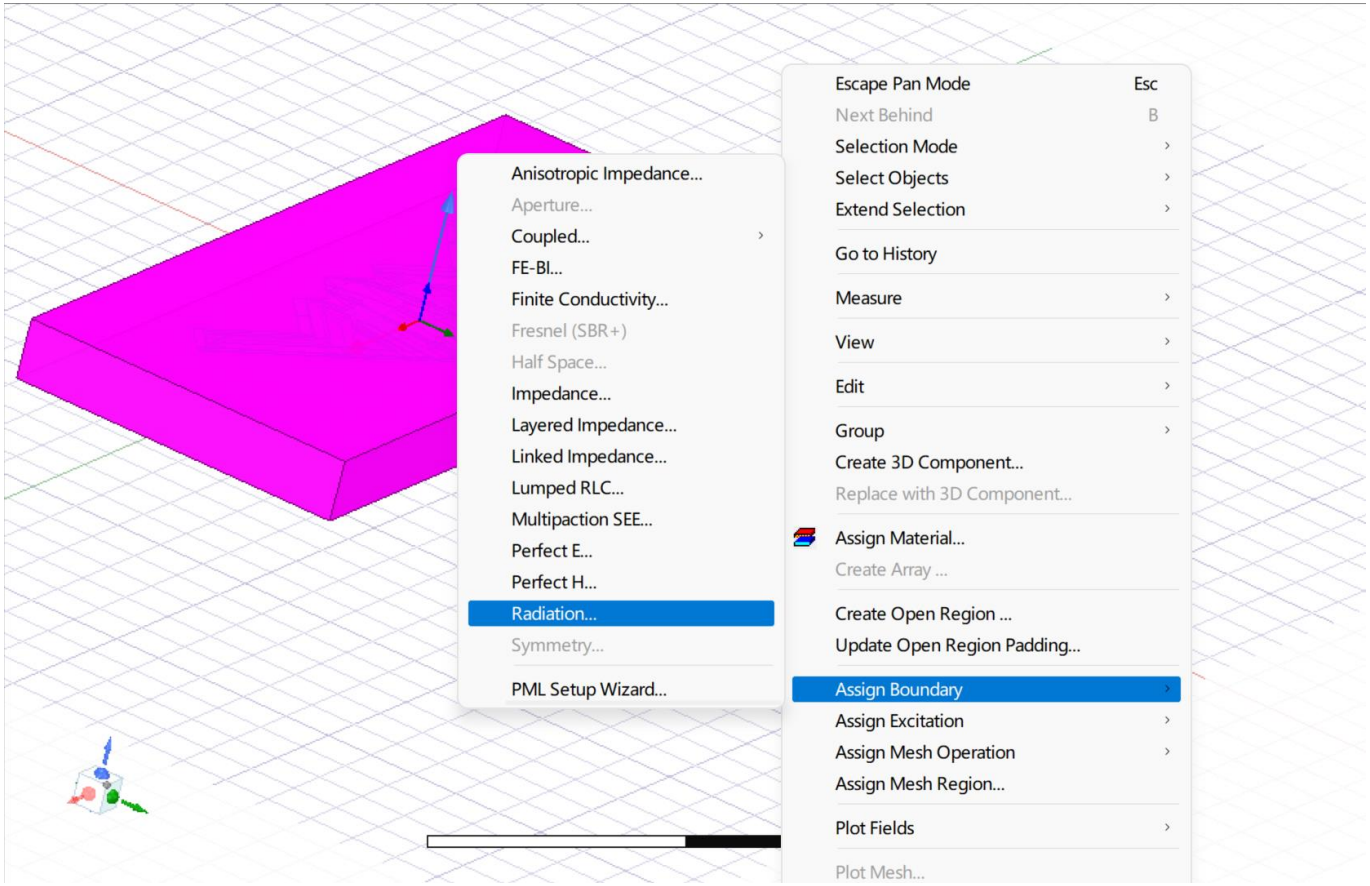




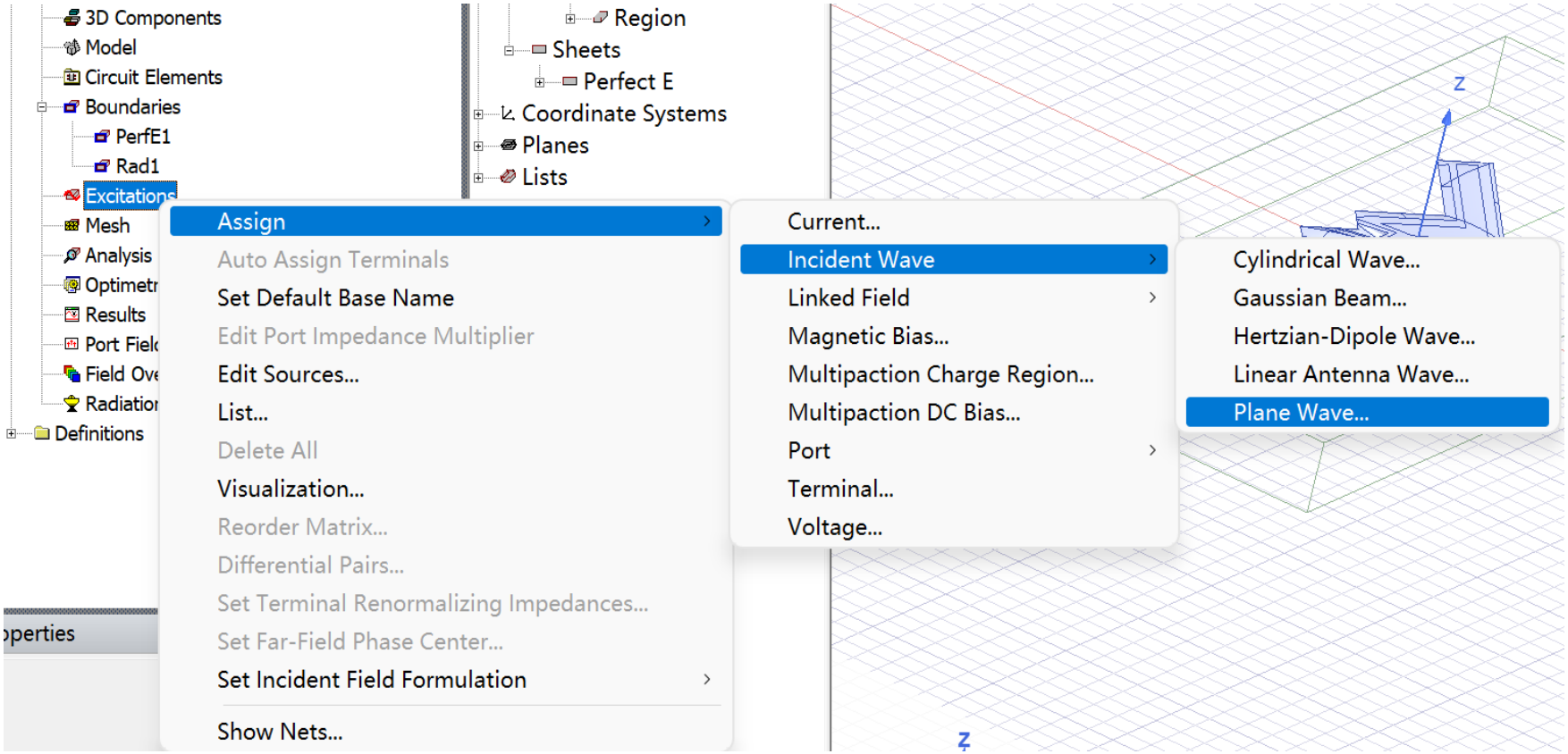


HFSS RCS单站仿真方法
——设置边界

将生成的盒子设置为辐射边界

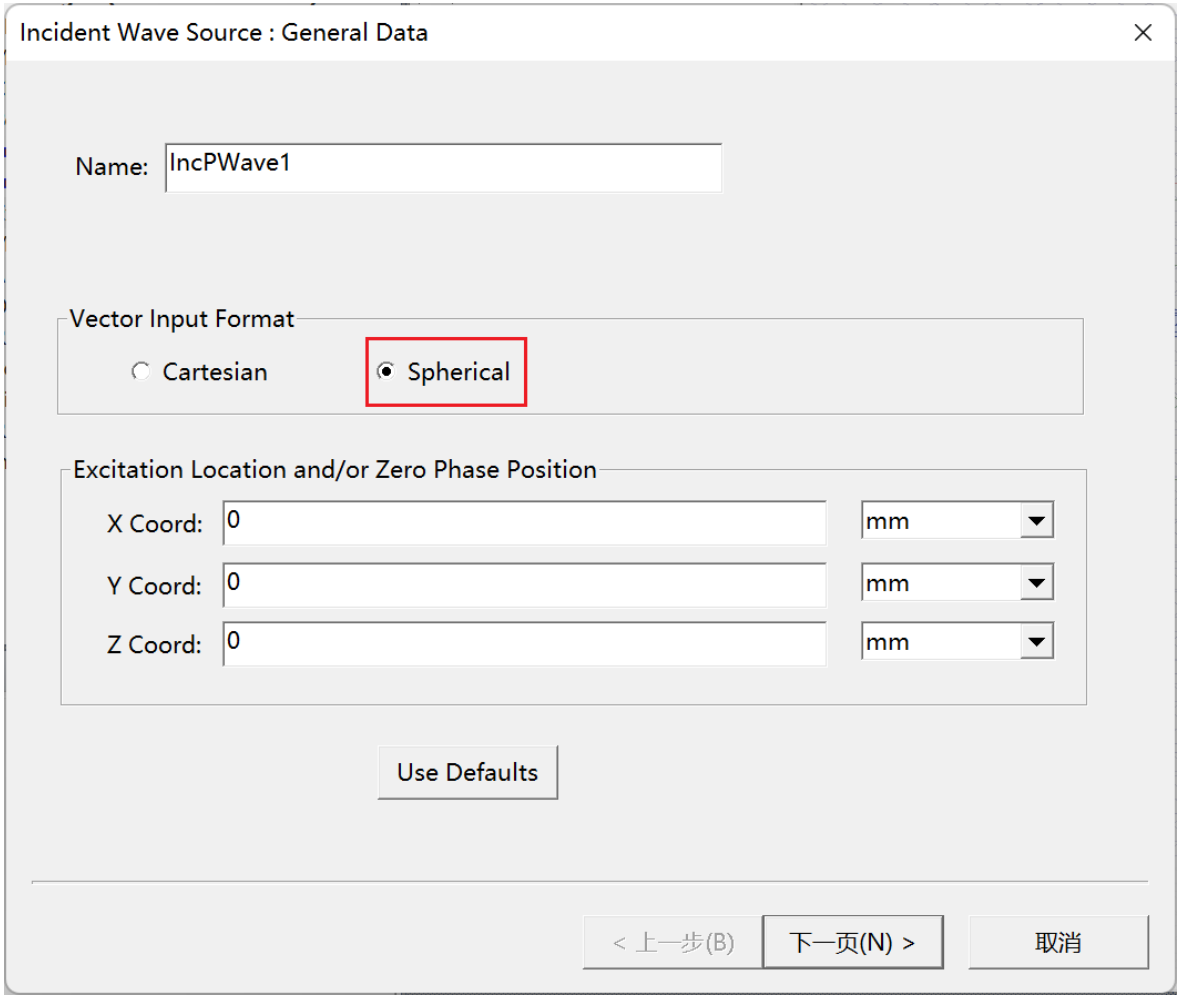


HFSS RCS单站仿真方法
——设置激励



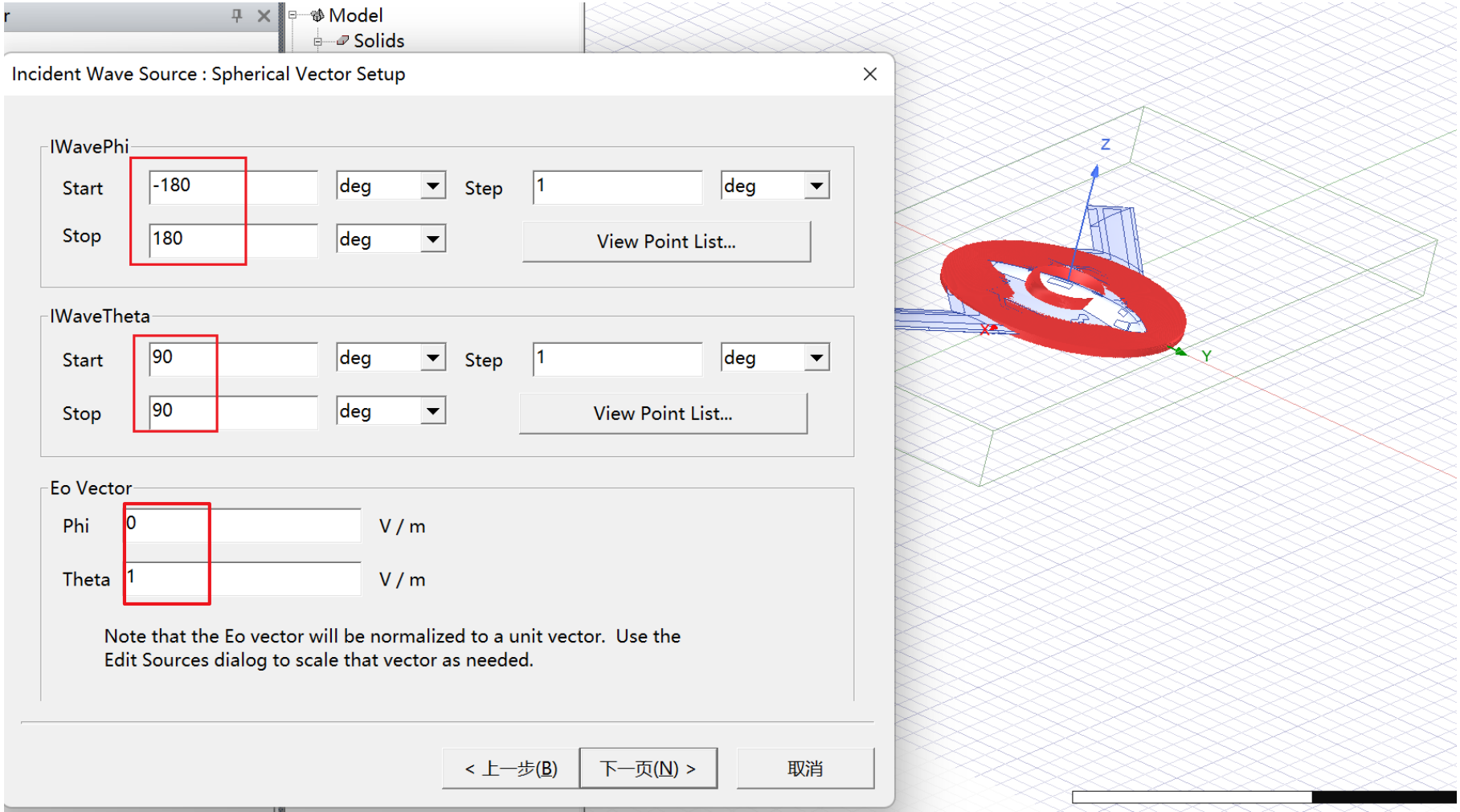
HFSS RCS单站仿真方法
——设置激励

选择球坐标系

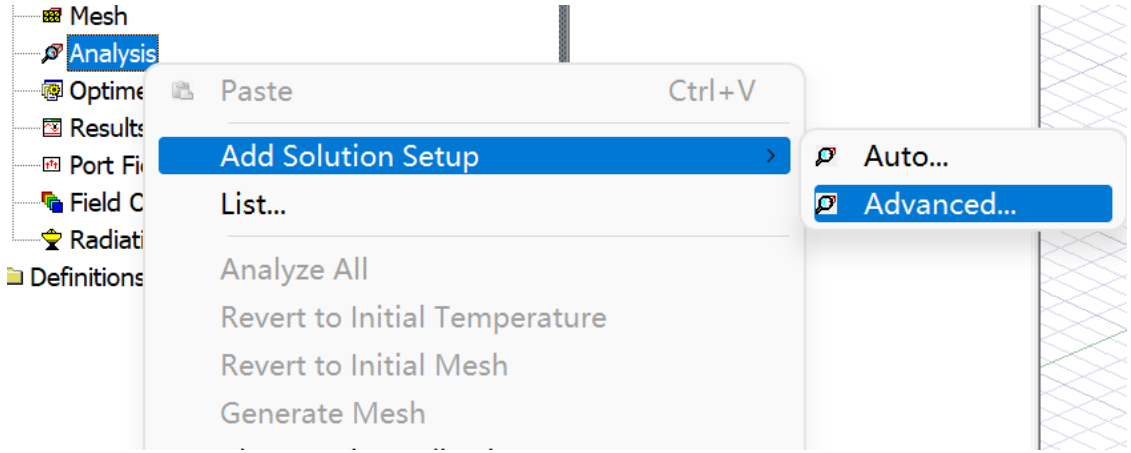


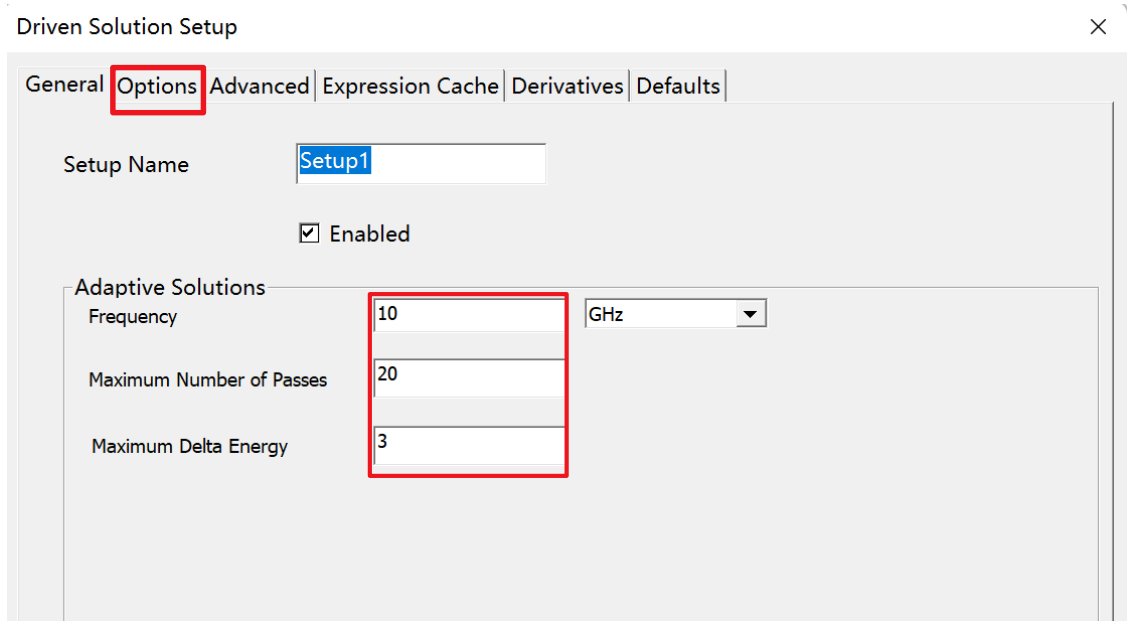
HFSS RCS单站仿真方法
——设置激励

设置入射波源属性



HFSS RCS单站仿真方法
——求解设置



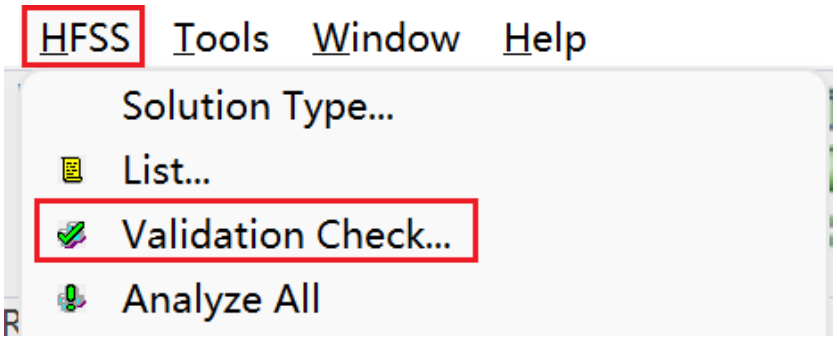


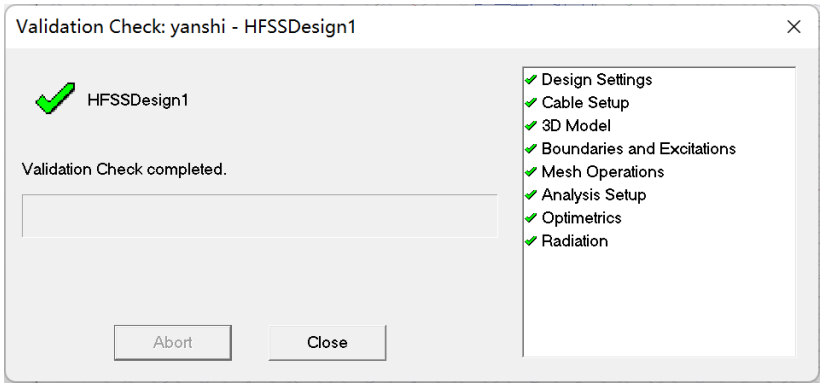
根据电脑性能调整设置，此处仅作演示。

Passes越大，delta energy越小，计算结果越精确，计算时间和消耗内存越大。

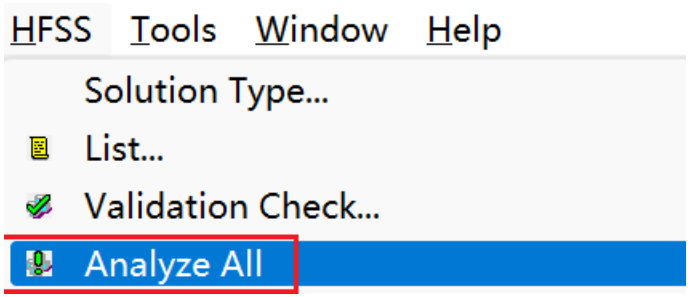
在options-initial mesh options可修改网格尺寸。

HFSS RCS单站仿真方法
——验证检查





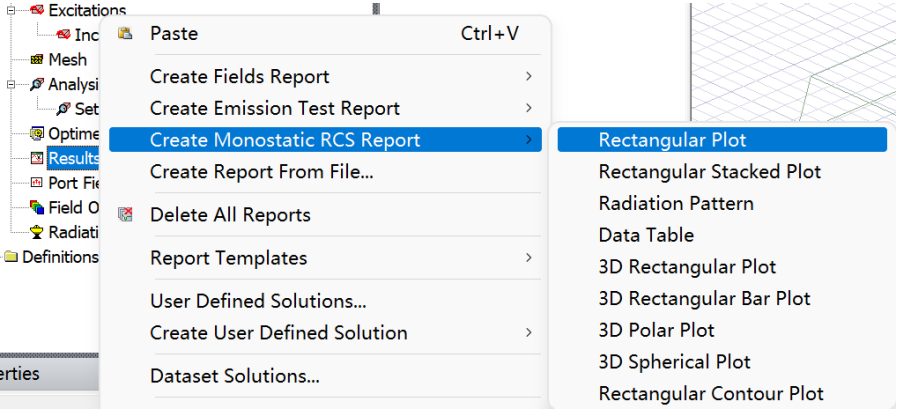
验证检查

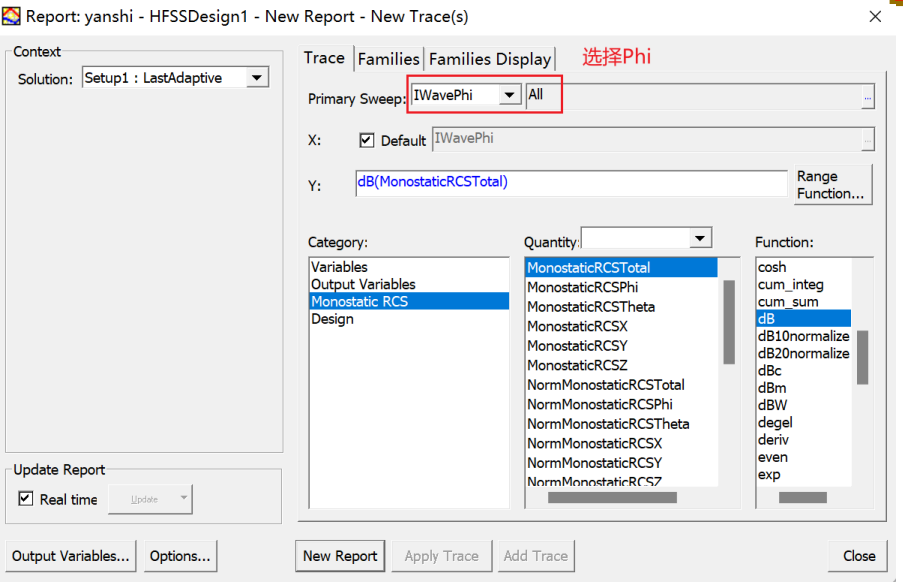


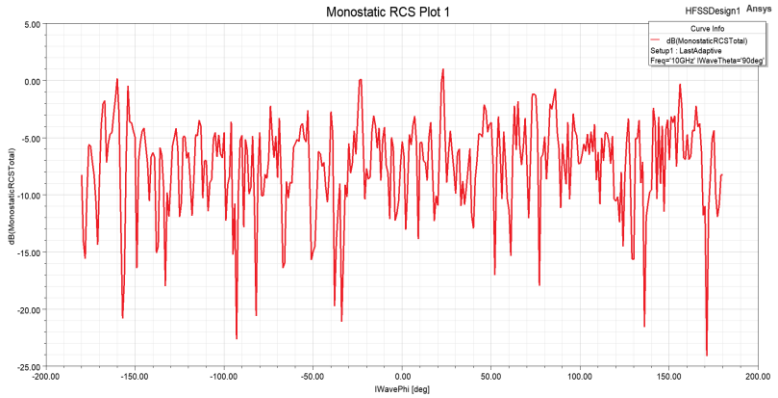
检查通过开始仿真计算

HFSS RCS单站仿真方法

——后处理查看

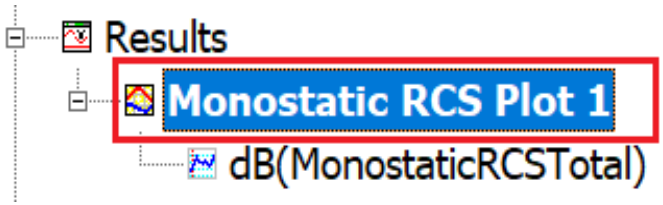


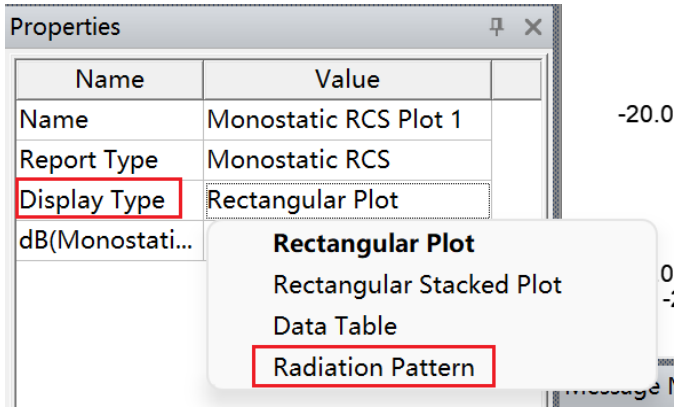




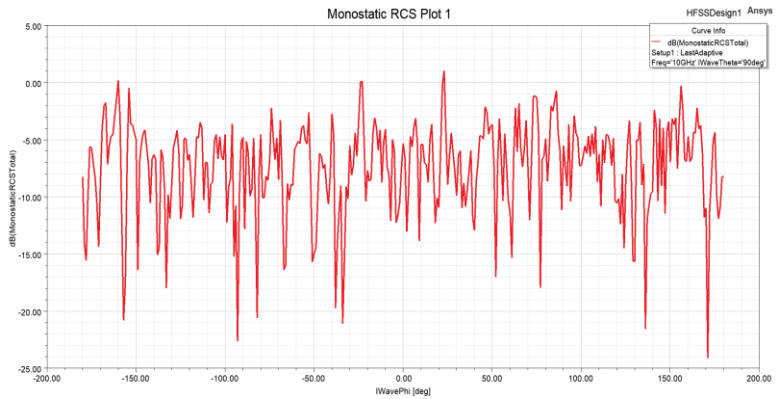
HFSS RCS单站仿真方法
——后处理查看

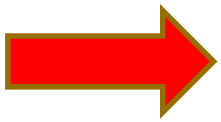
调整查看类型

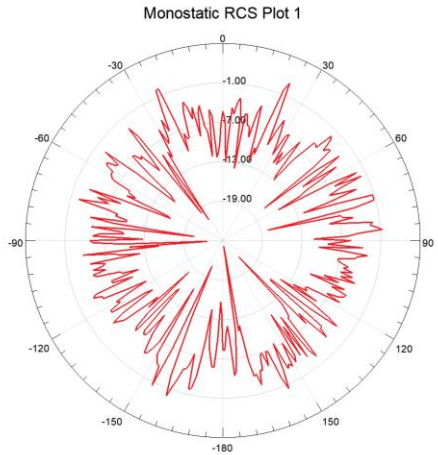




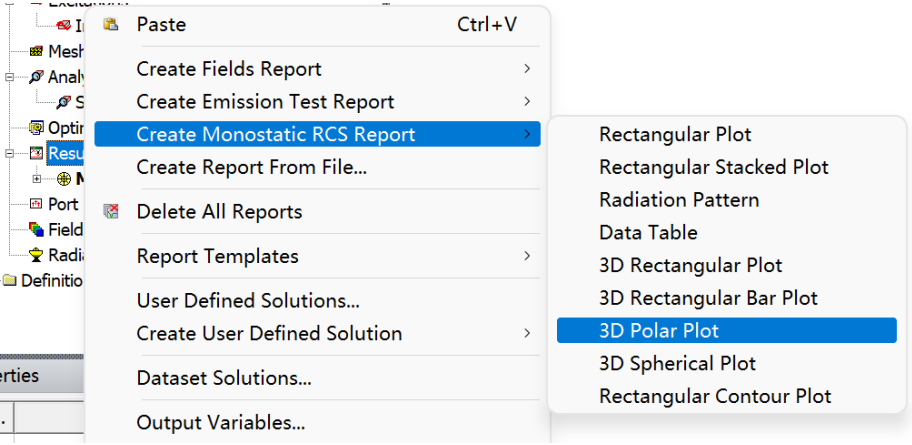
显示区别

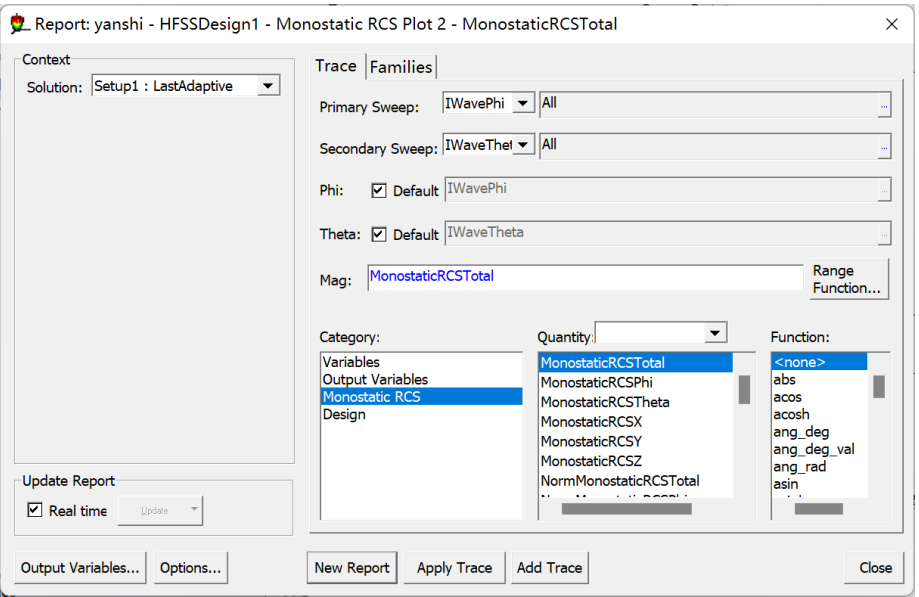


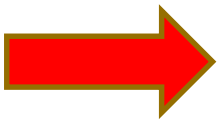


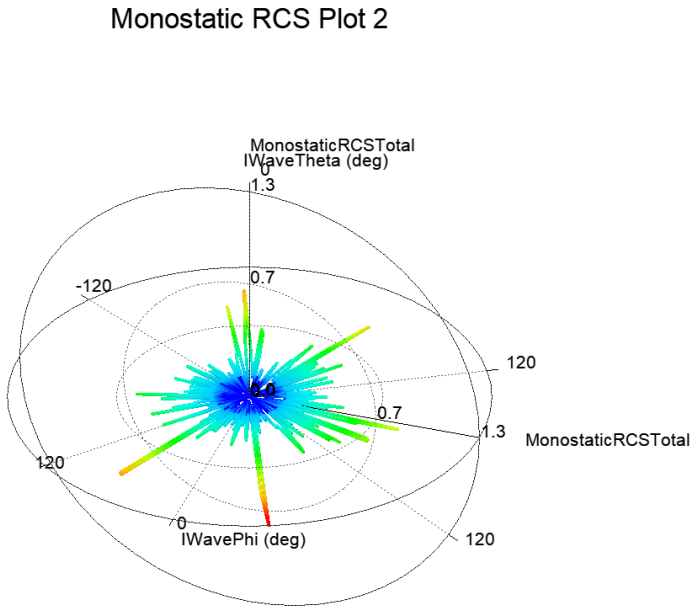


HFSS RCS单站仿真方法
——后处理查看



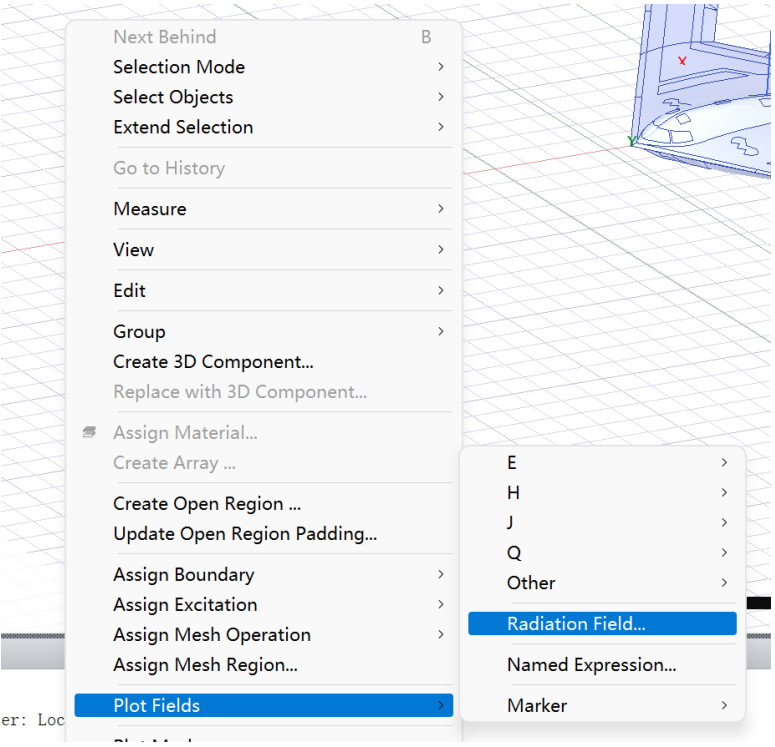




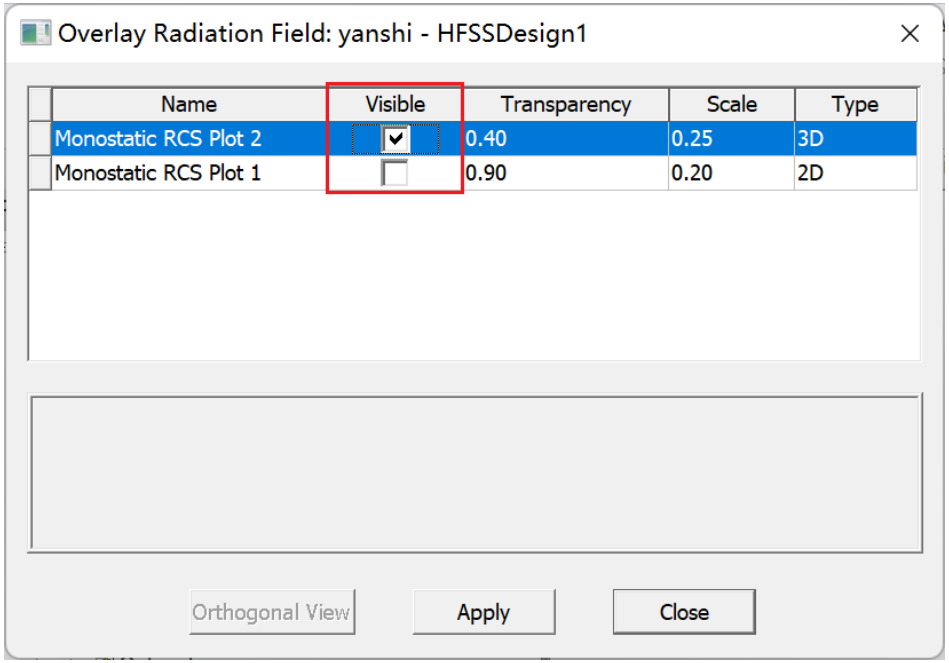


HFSS RCS单站仿真方法
——后处理查看

在模型中显示结果

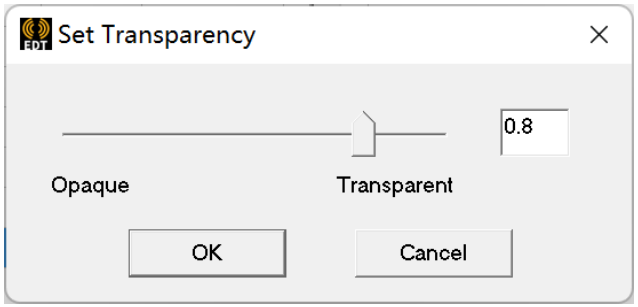


模型空白处右键点击

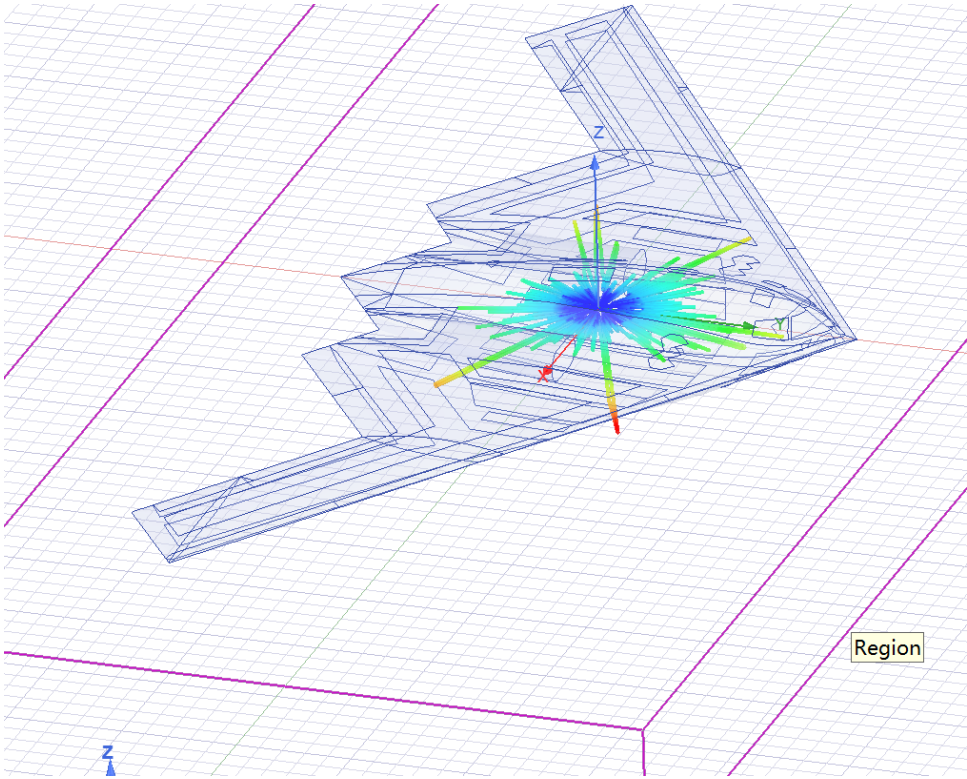


HFSS RCS单站仿真方法
——后处理查看

调整模型透明度



双击Region/B2，修改透明度



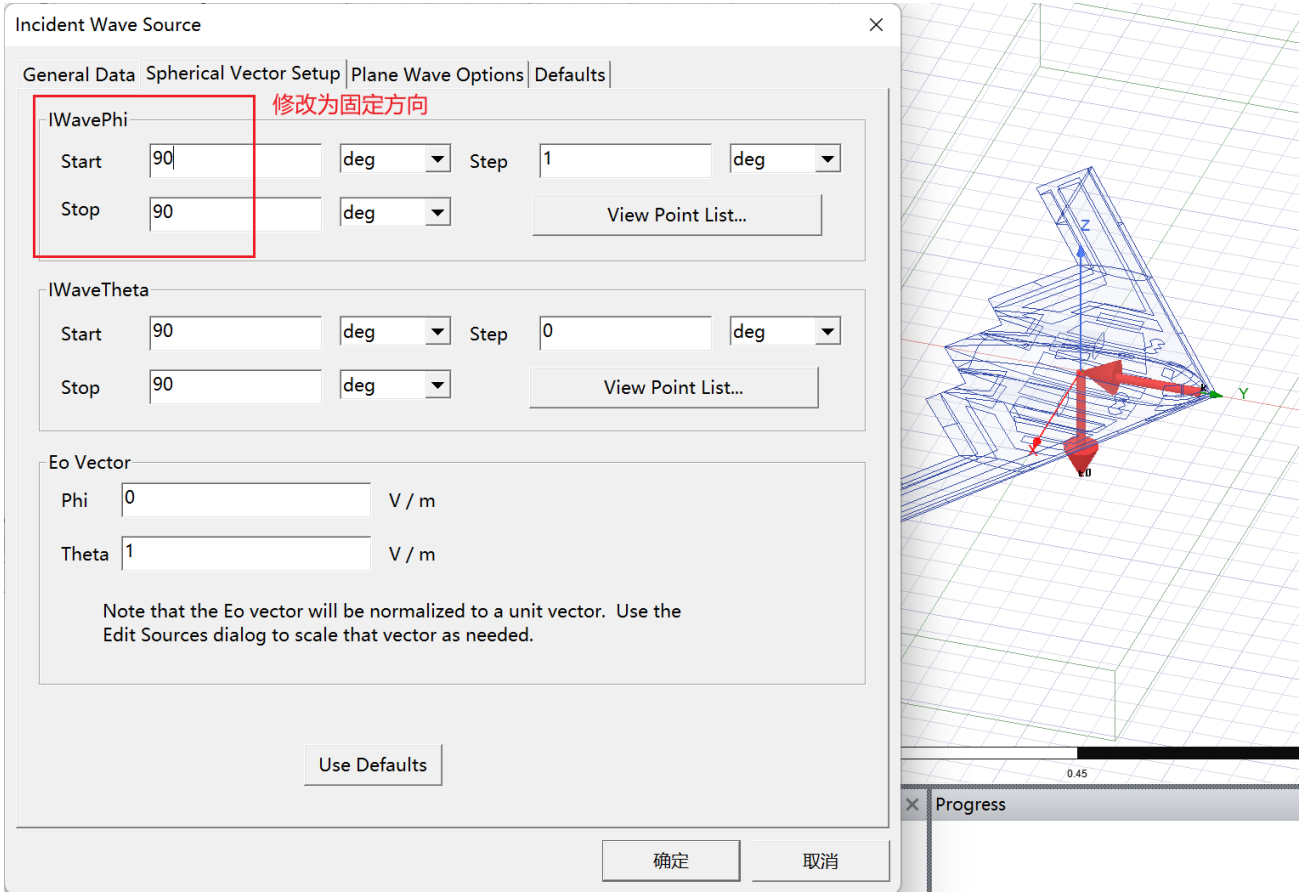
HFSS RCS双站仿真方法

创建工程、模型导入、边界设置与单站RCS相同

激励设置做如下改变

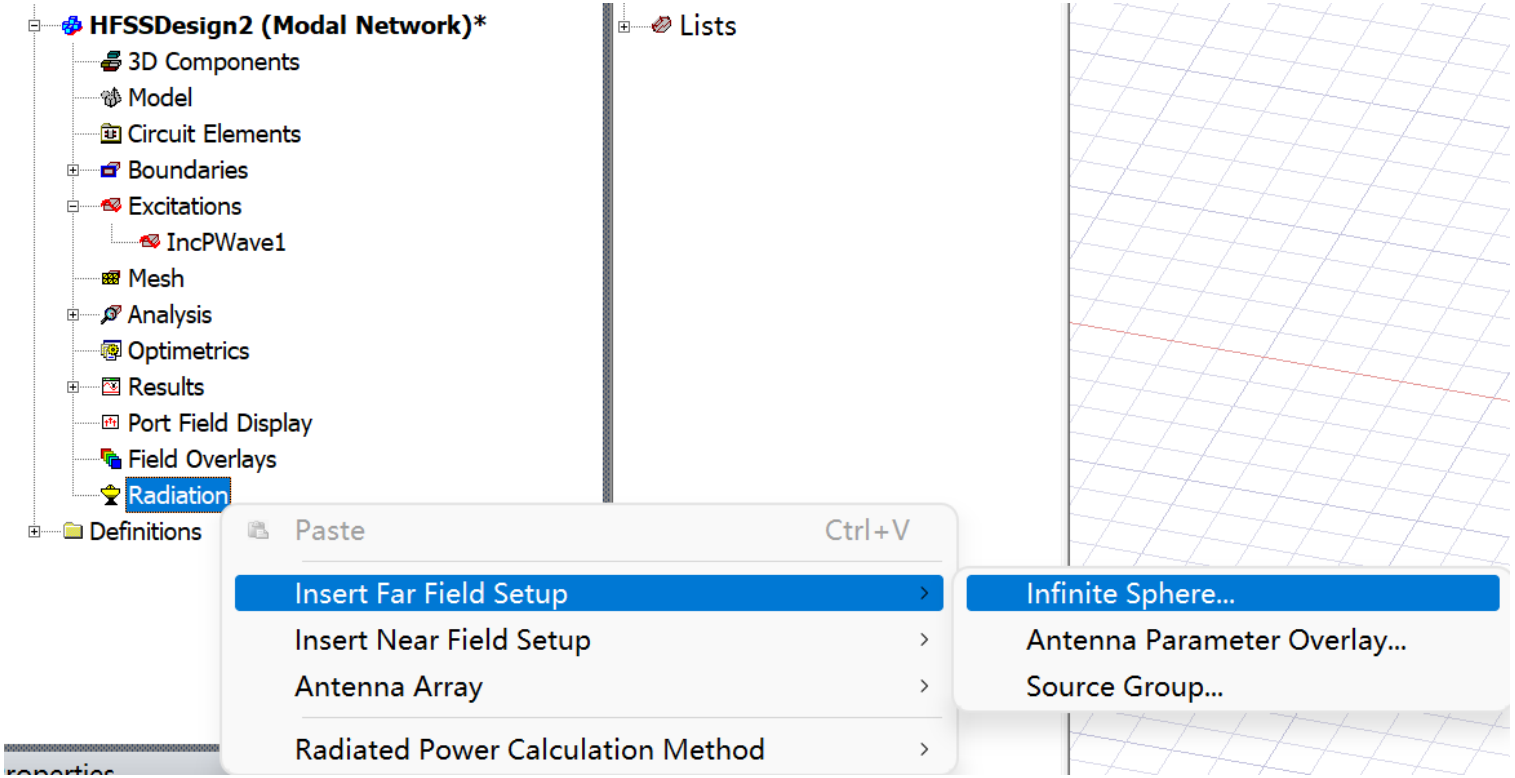
HFSS RCS双站仿真方法
——激励设置

复制单站RCS工程
双击Excitations-IncPwave1



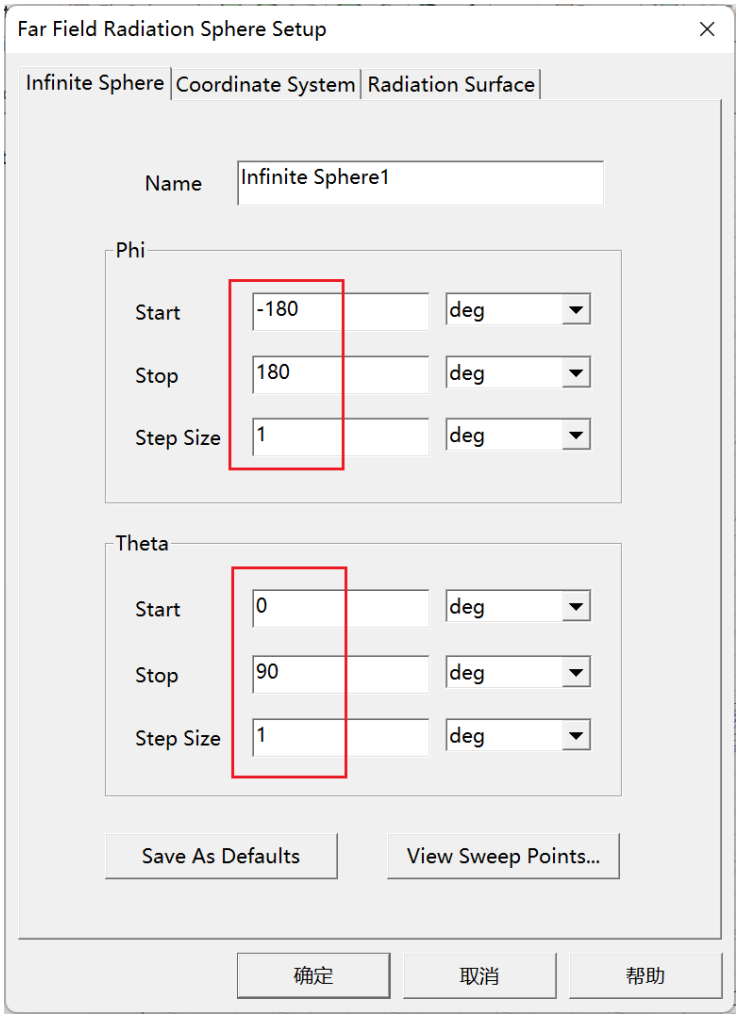
HFSS RCS双站仿真方法
——远场设置

方法一：全部扫描，查看结果时单独选择方位角



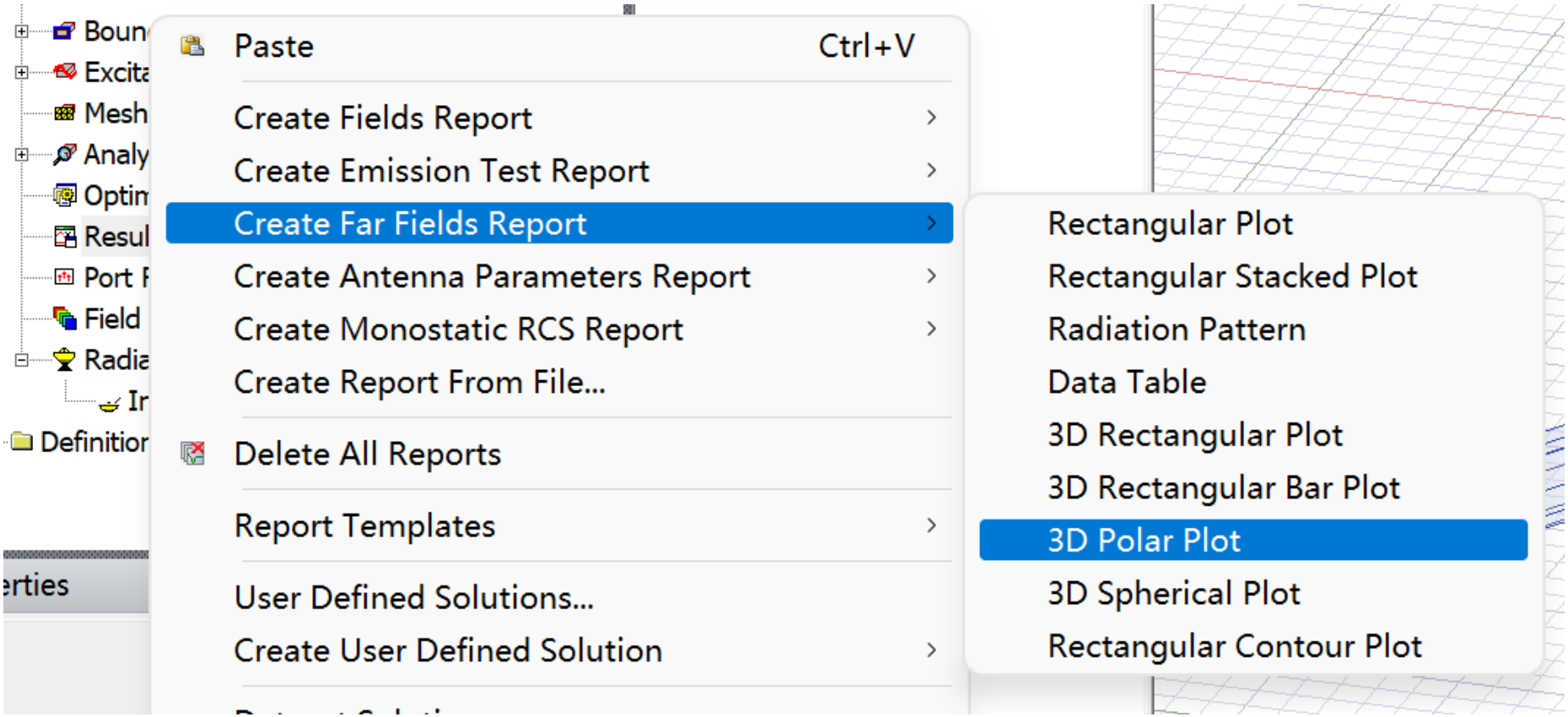
HFSS RCS双站仿真方法

——远场设置

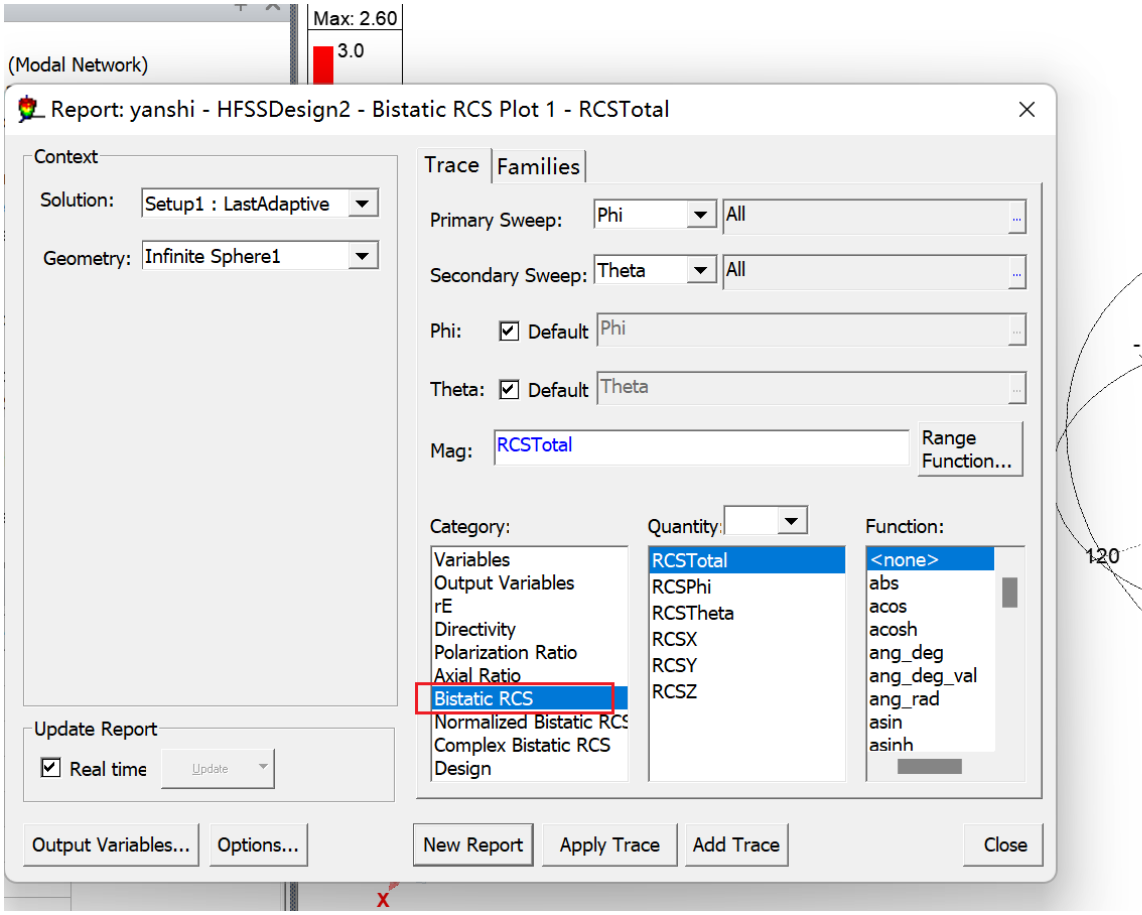


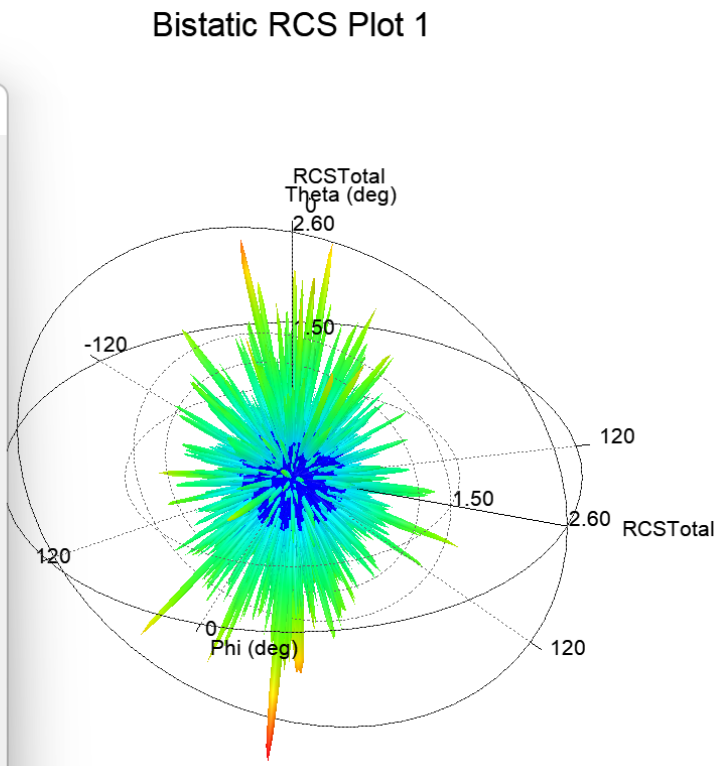
HFSS RCS双站仿真方法
——后处理查看

仿真计算完成后右键Result



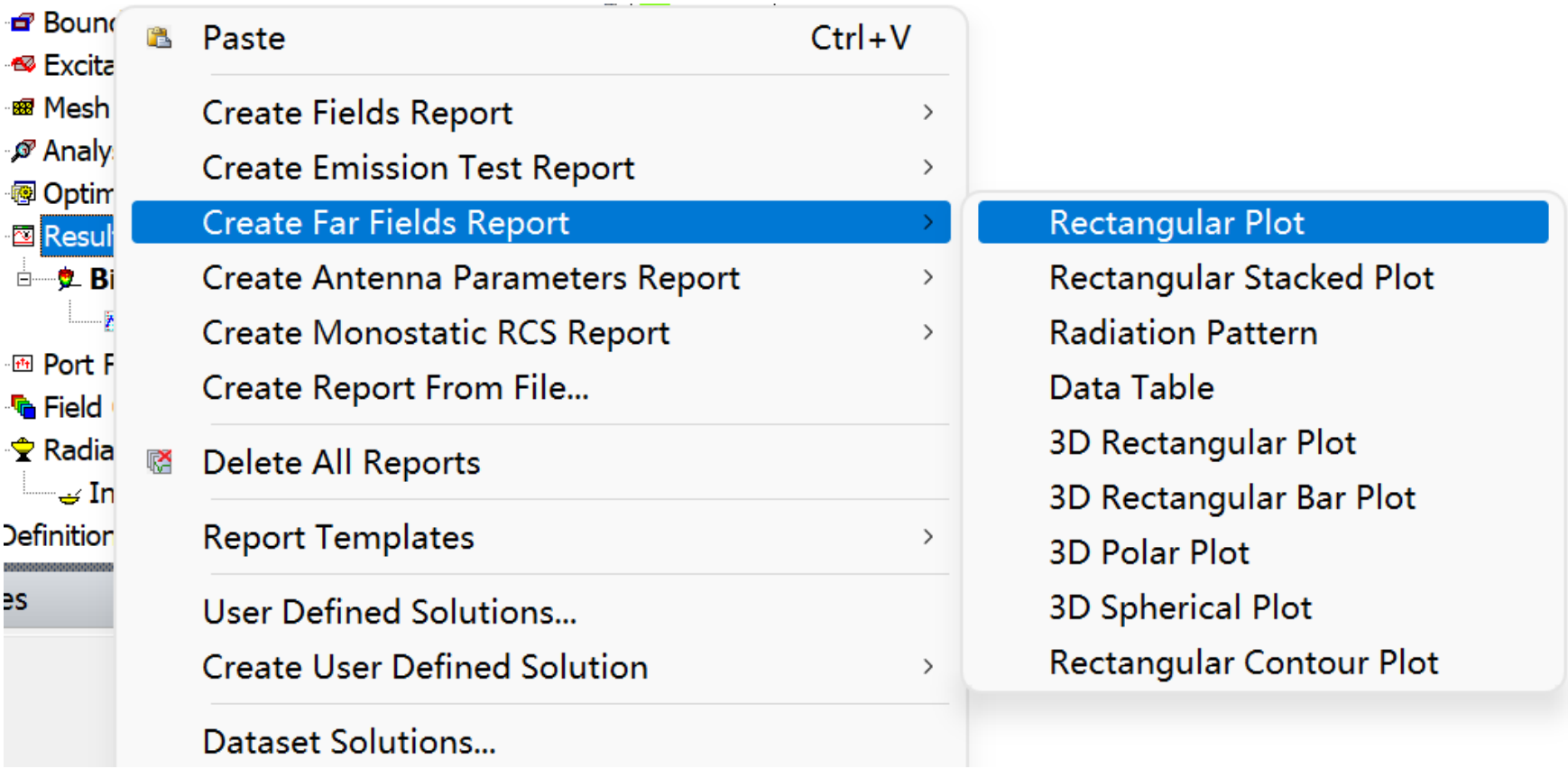
HFSS RCS双站仿真方法
——后处理查看





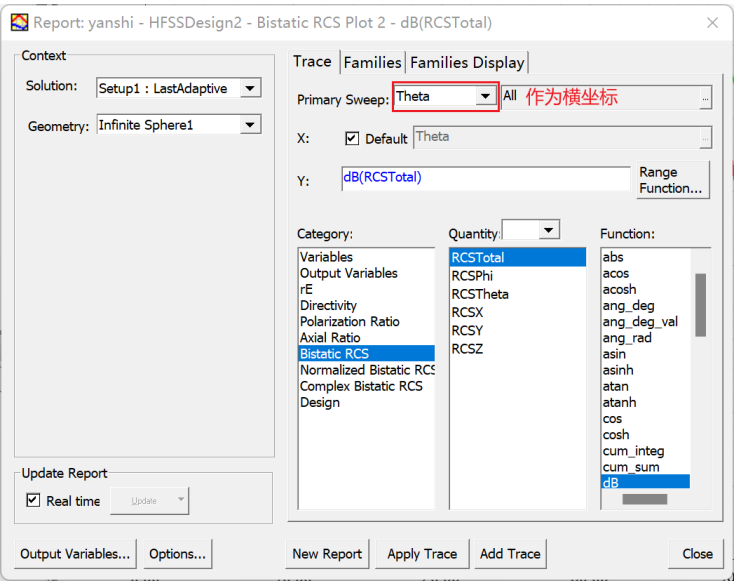
HFSS RCS双站仿真方法
——后处理查看

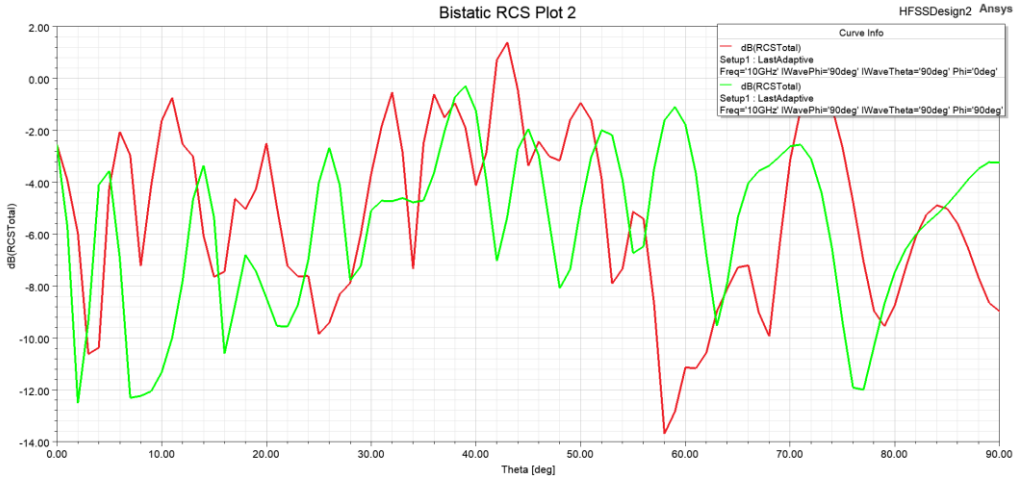
右键Result

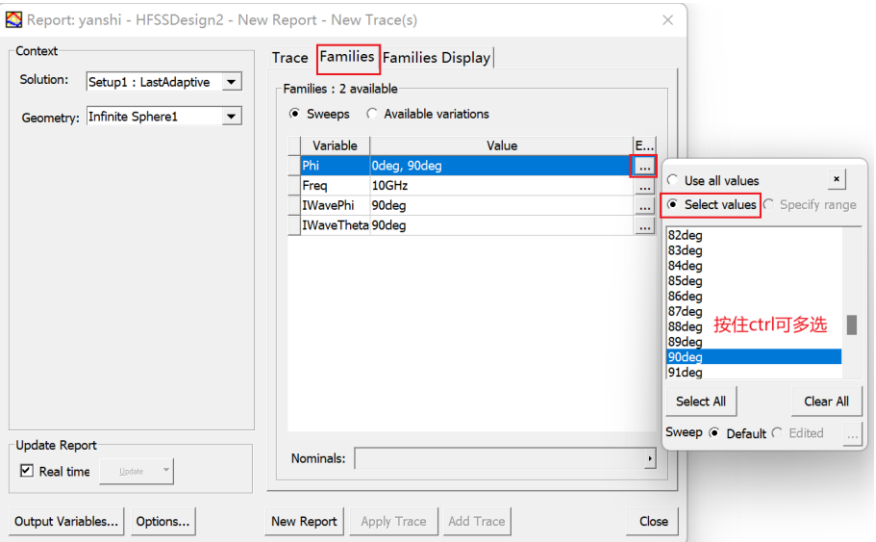


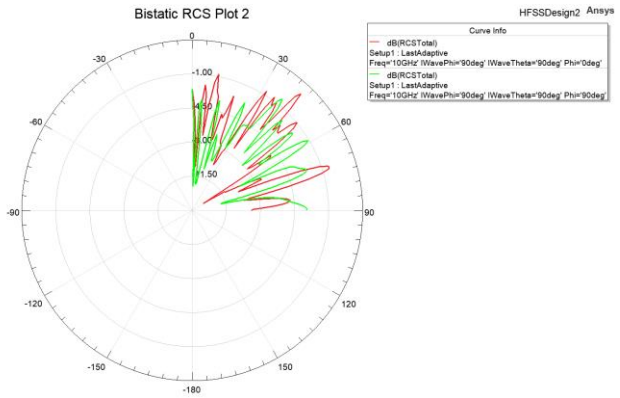
HFSS RCS双站仿真方法

——后处理查看





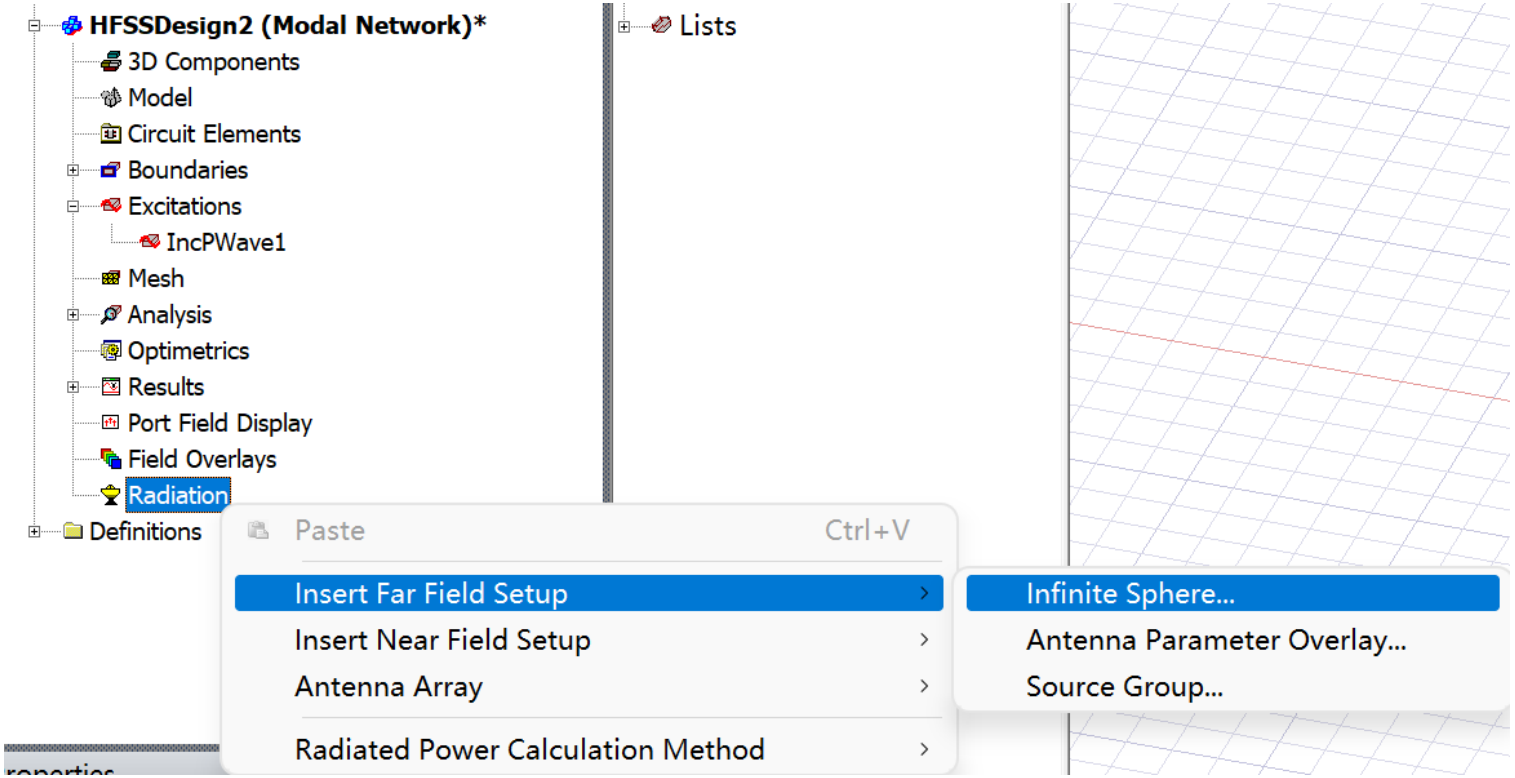




更改查看类型

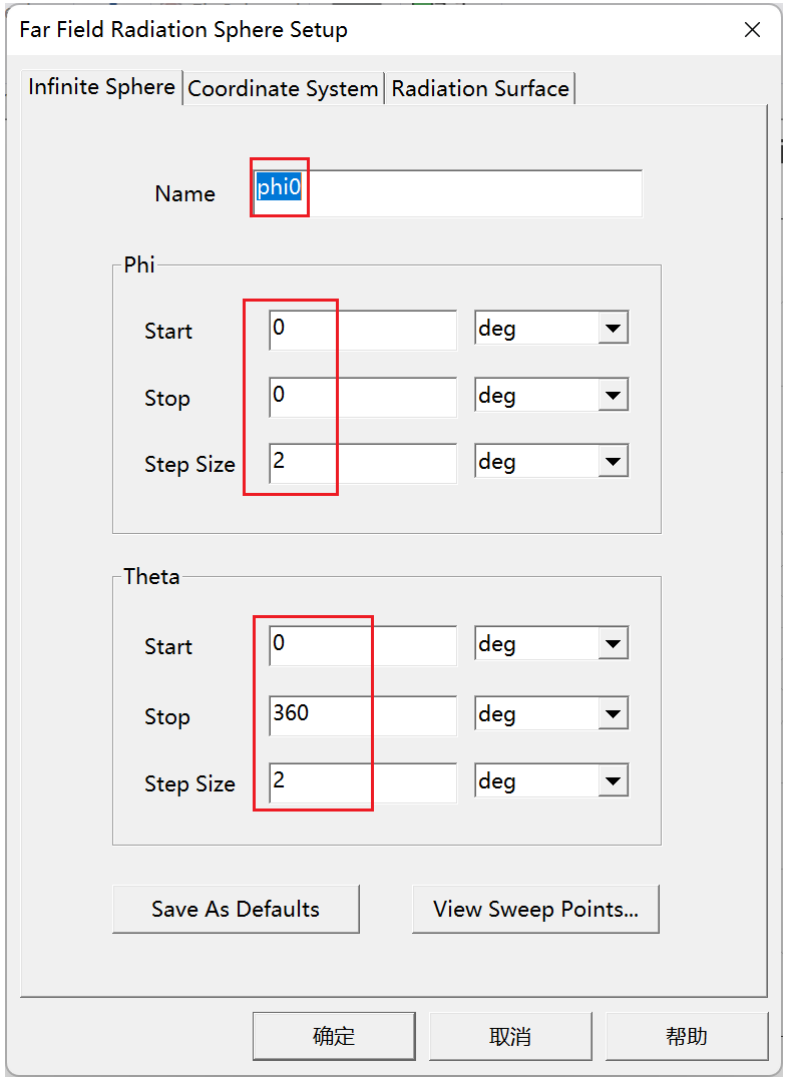
HFSS RCS双站仿真方法
——远场设置

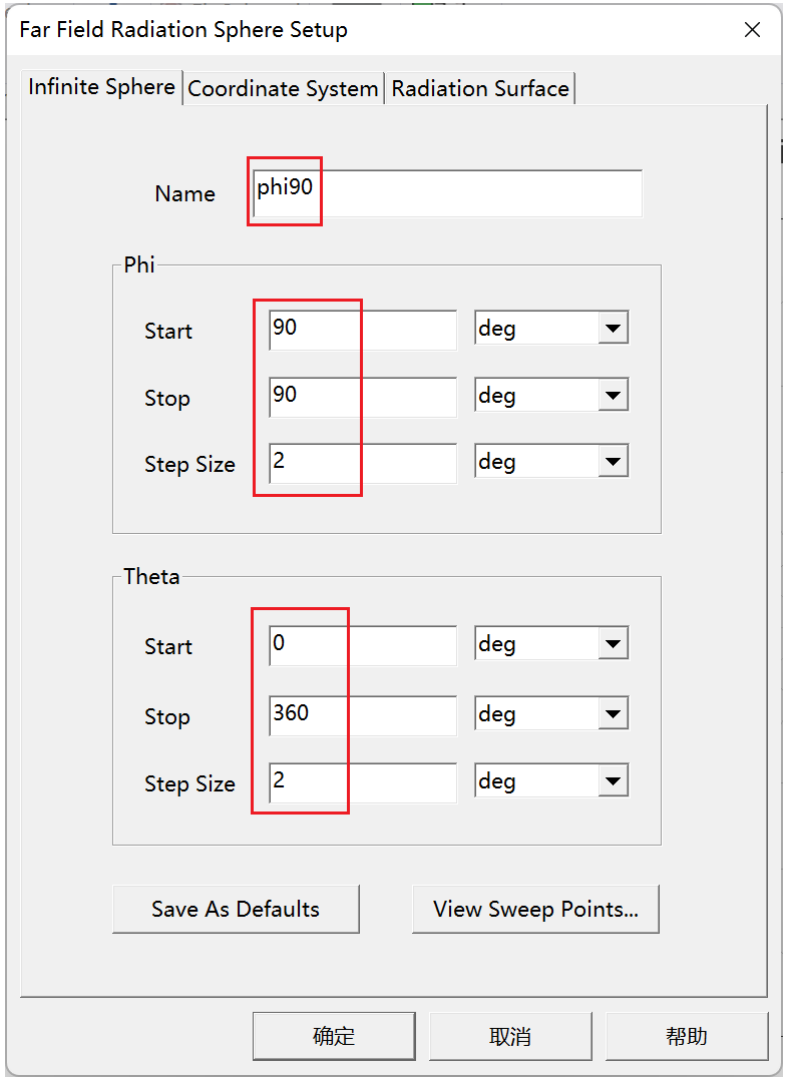
方法二：远场设定指定考察位置



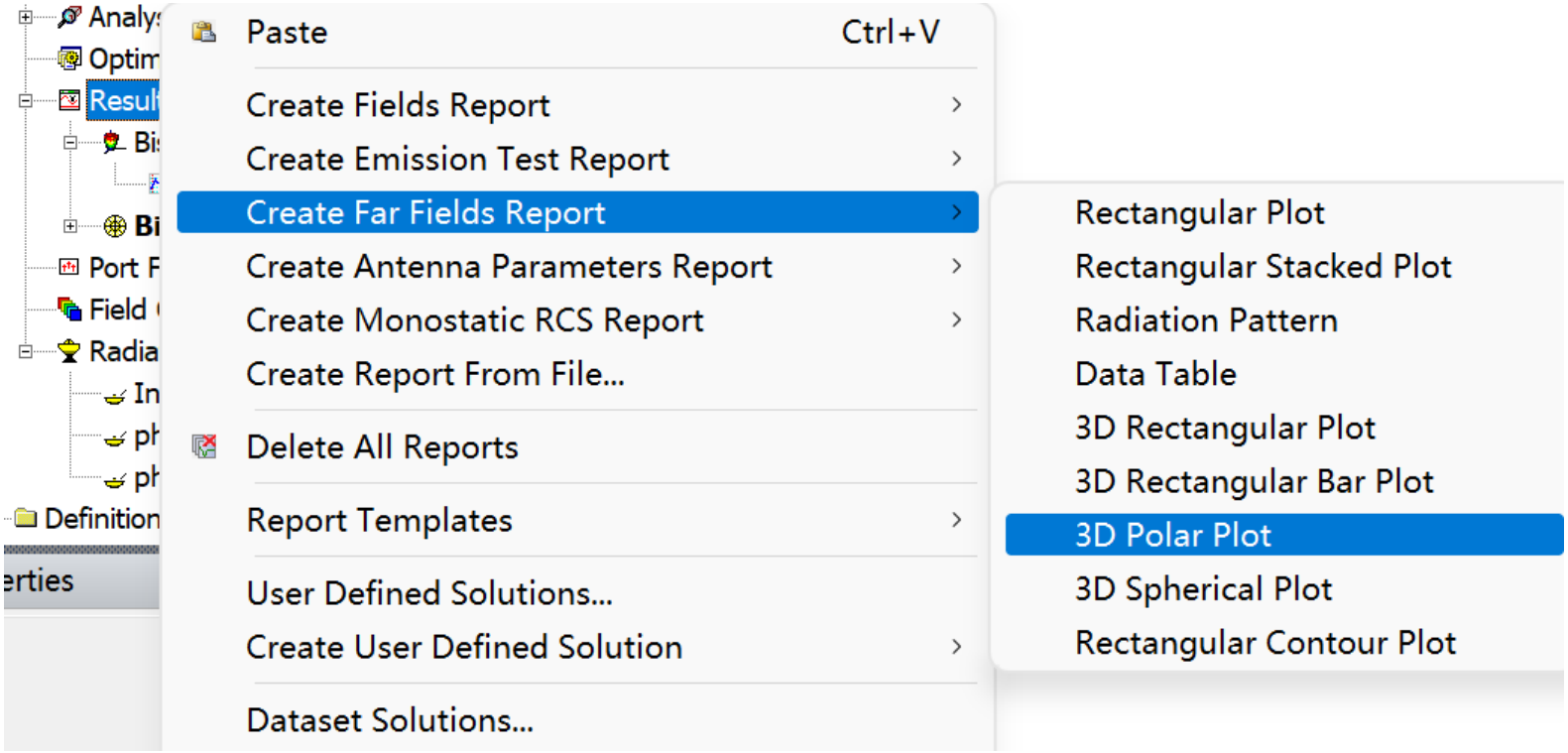
HFSS RCS双站仿真方法

——远场设置



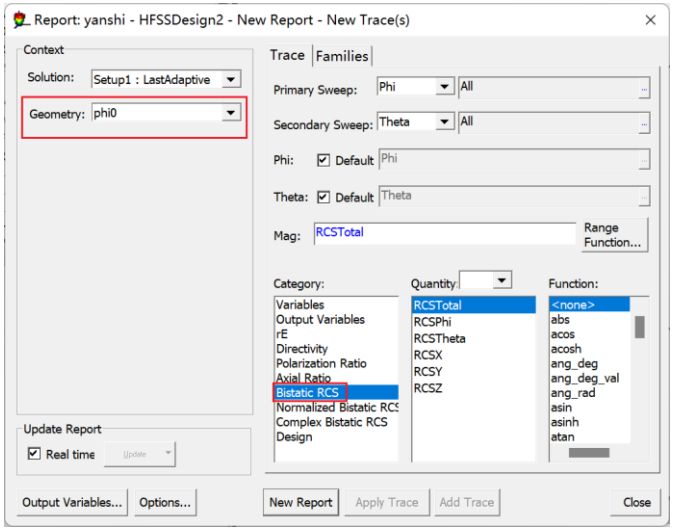


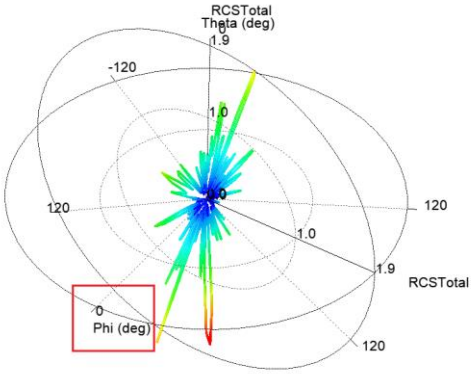
HFSS RCS双站仿真方法
——后处理查看

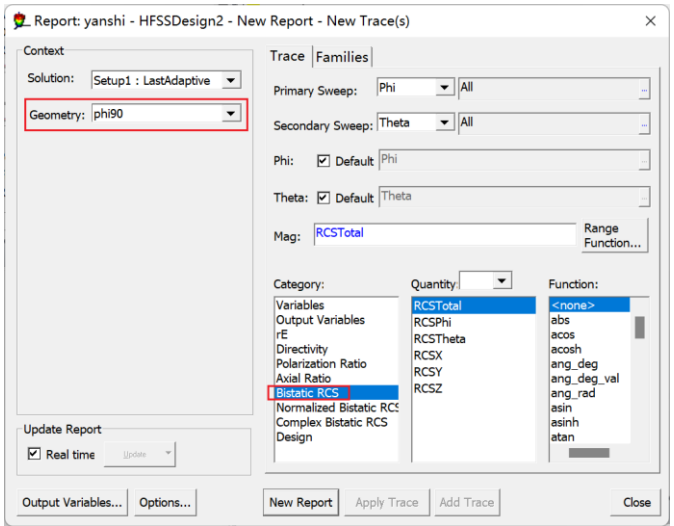


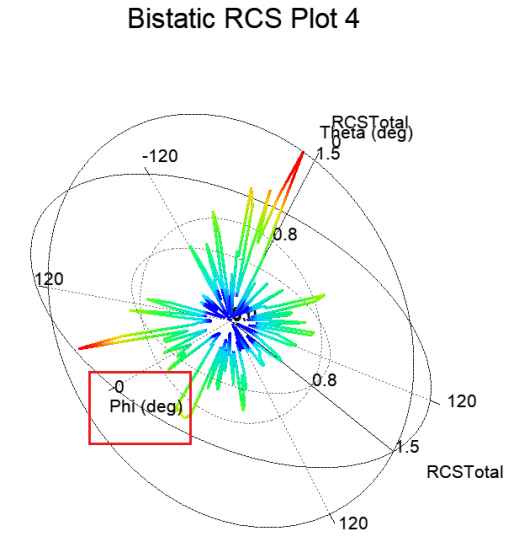
HFSS RCS双站仿真方法

——后处理查看

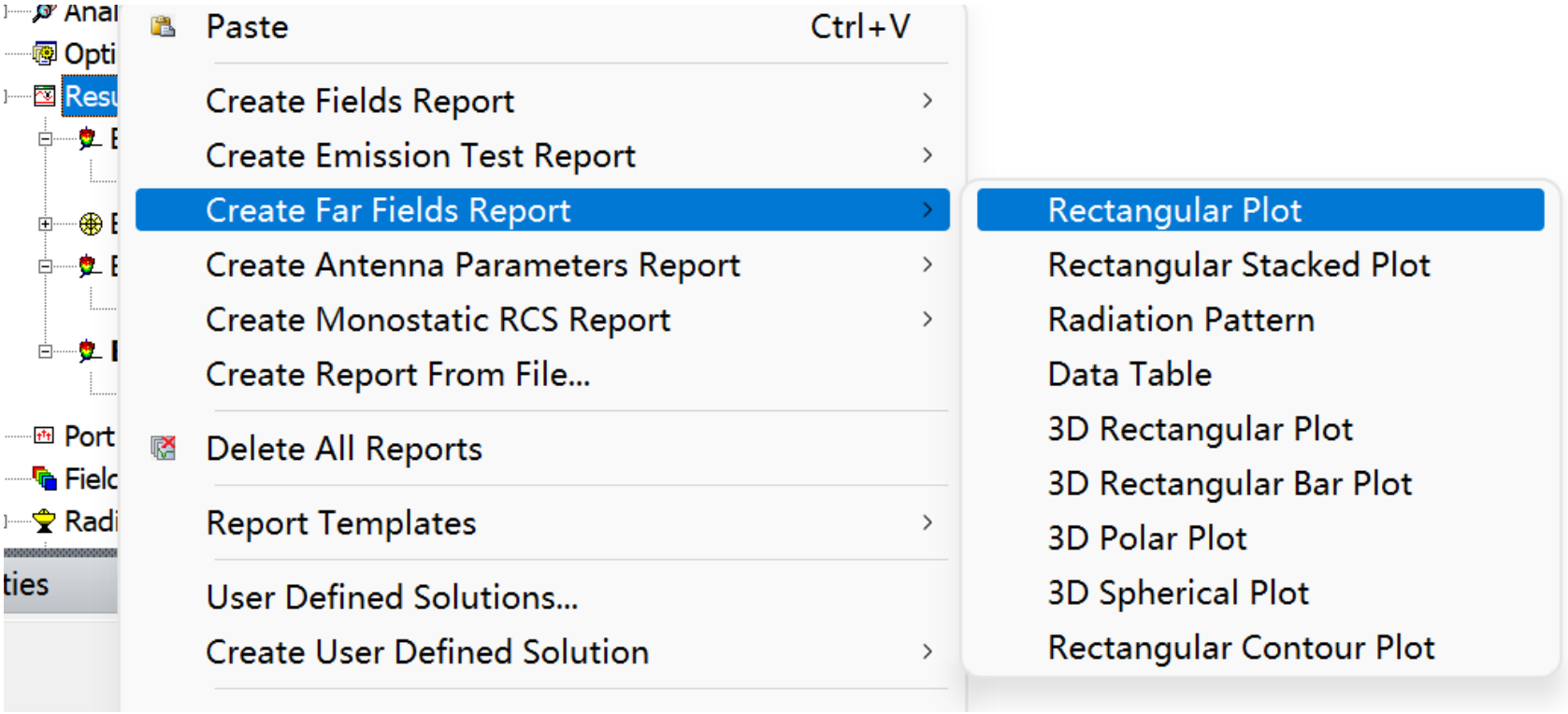






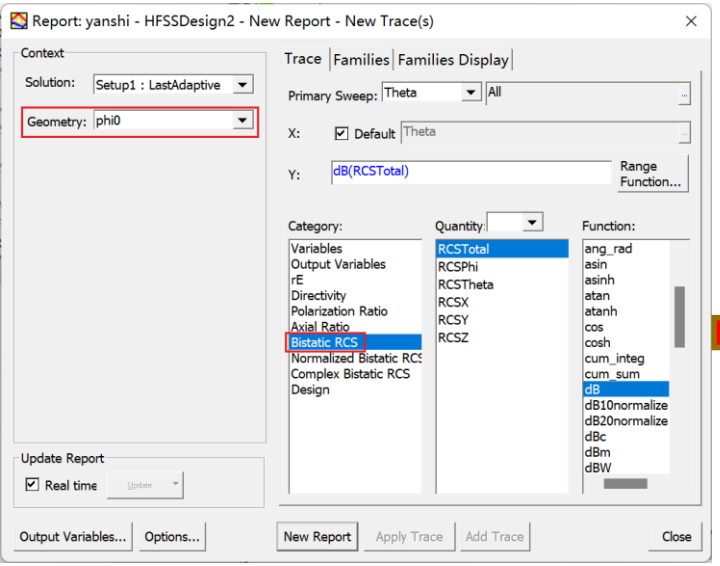


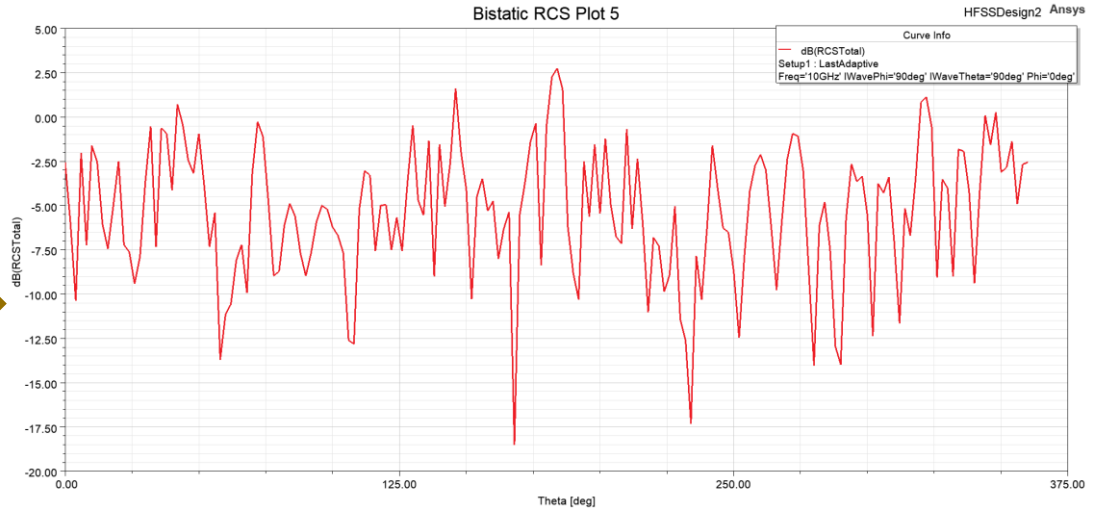
HFSS RCS双站仿真方法
——后处理查看

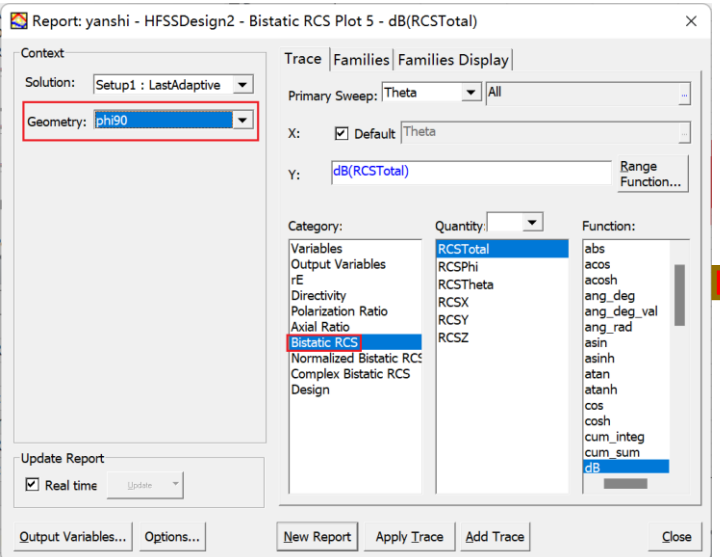


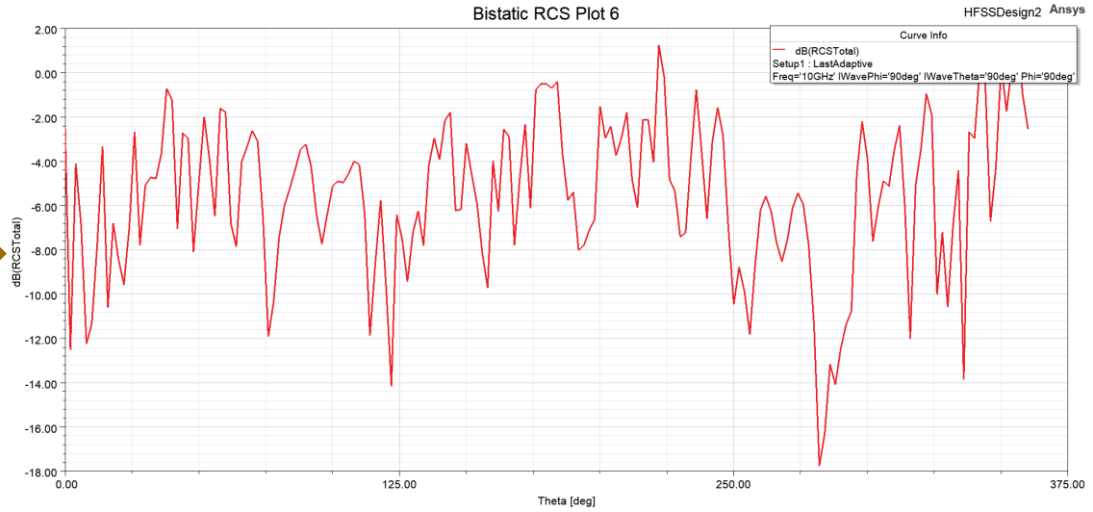
HFSS RCS双站仿真方法

——后处理查看









感谢倾听