



INDIAN INSTITUTE OF INFORMATION TECHNOLOGY,
DESIGN AND MANUFACTURING,
KANCHEEPURAM

RFMCD CIRCUIT DESIGN PRACTICE

UNEQUAL POWER DIVIDER/COMBINER

Nithesh

ESD19I008

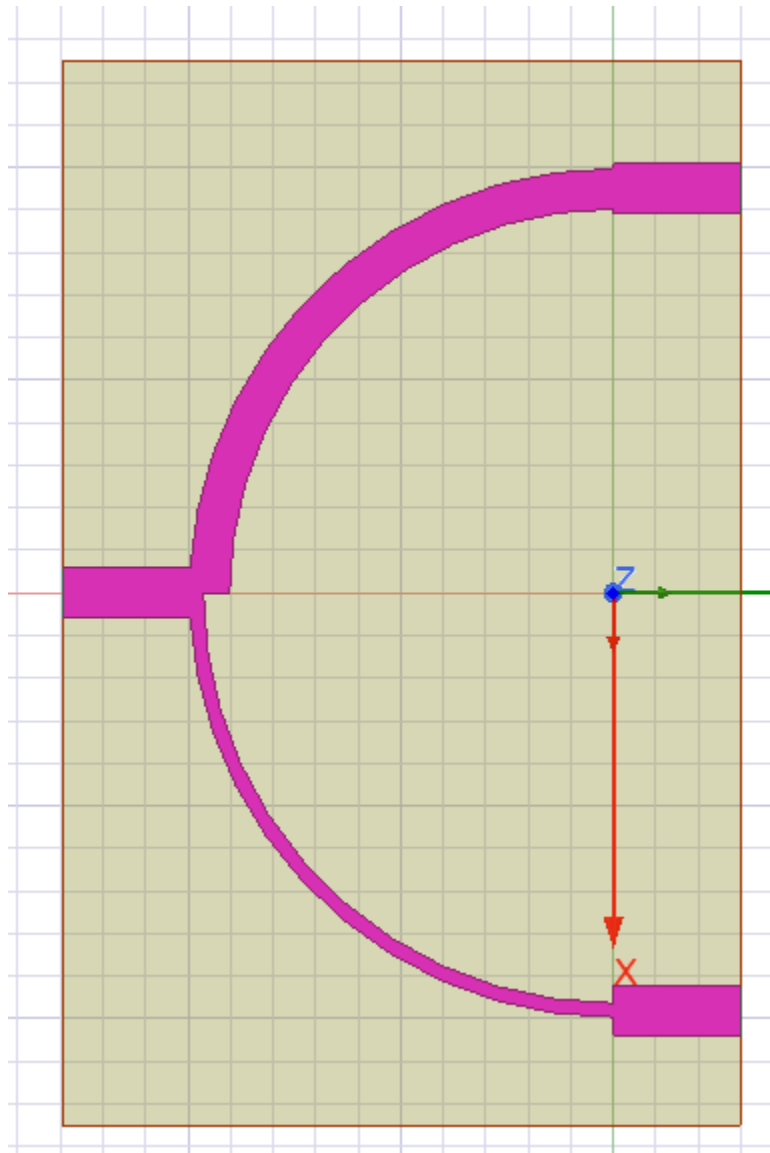
Aim:

To design and analyze an unequal power divider/combiner.

Apparatus required:

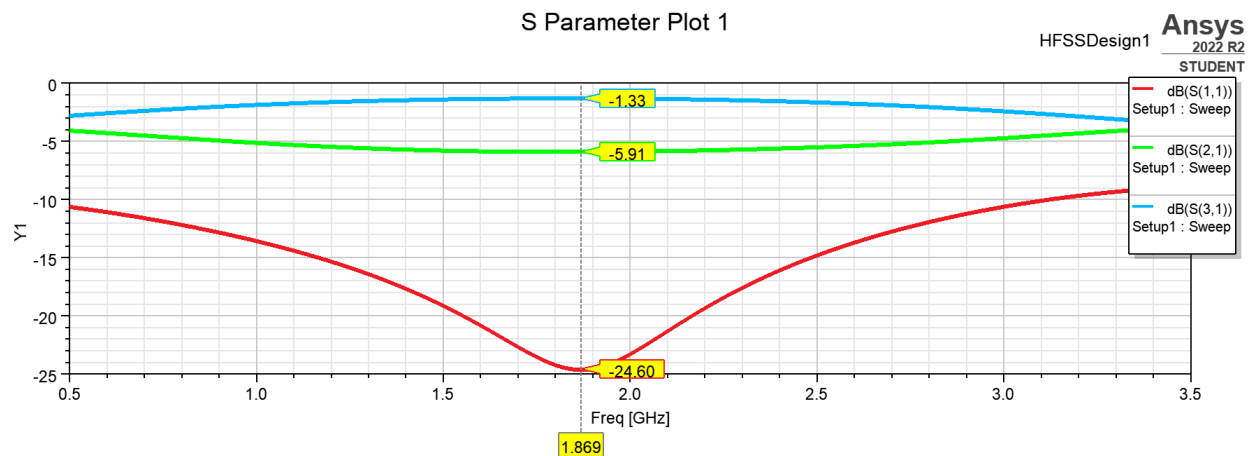
ANSYS Electromagnetics Desktop

Design:



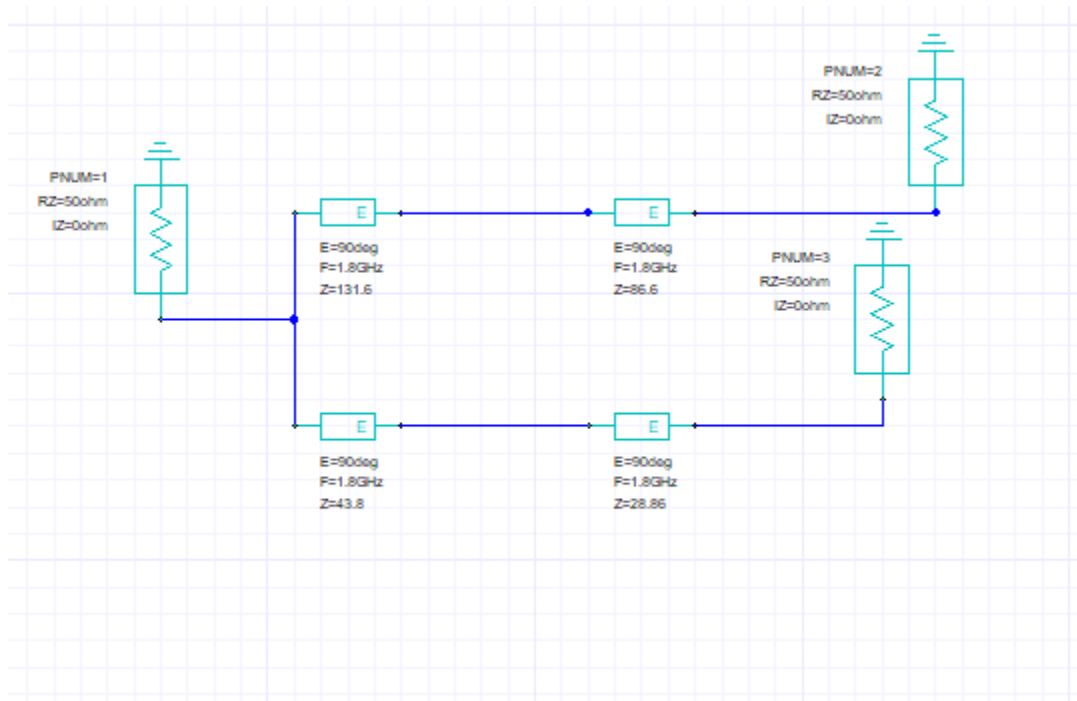
ACTIVITY 1:

S parameter plot:

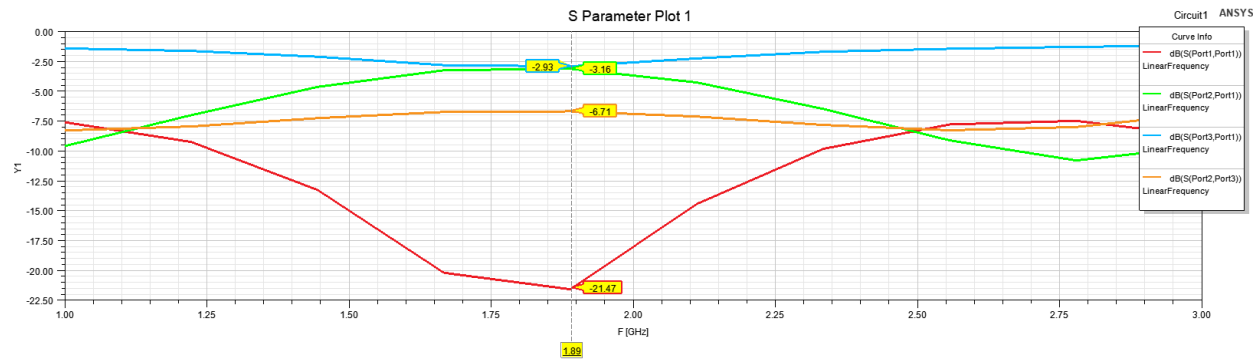


ACTIVITY 2:

Circuit design of unequal power divider:

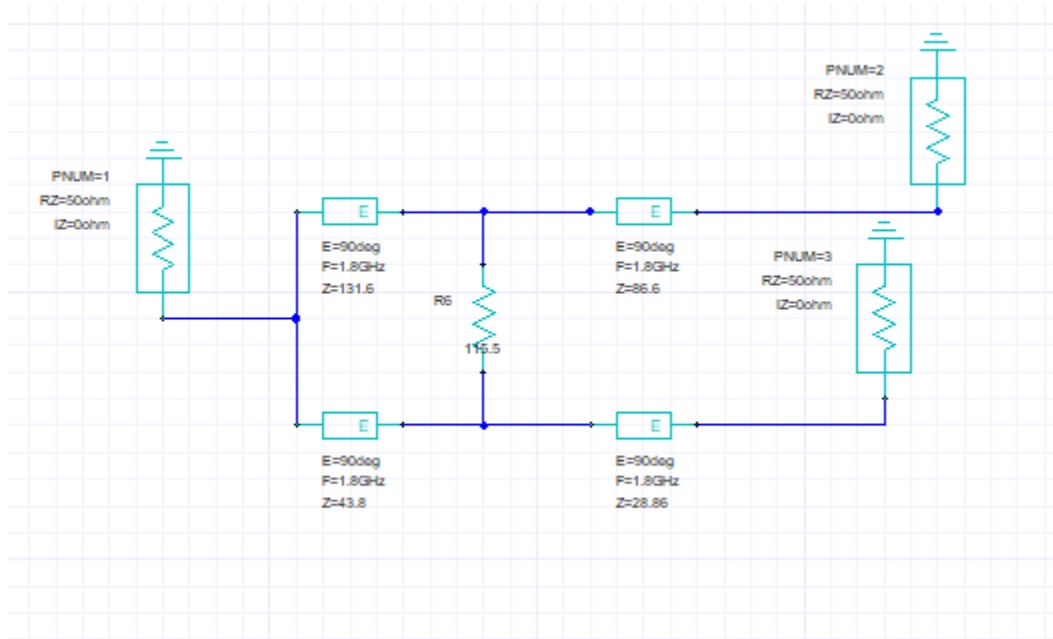


S parameter plot:

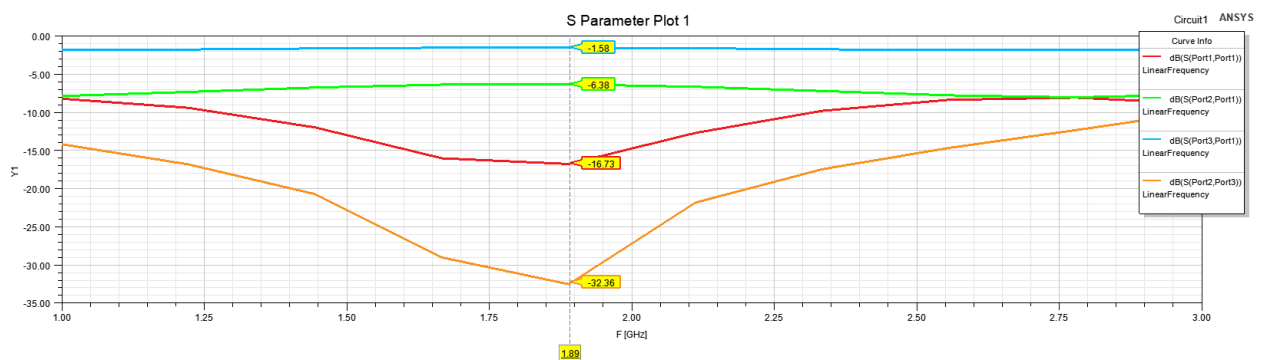


Activity 3:

Unequal power combiner:



S parameter plot:



Inference:

- a perfect unequal power divider, the power split in 1:3 ratio.
- Unequal Power dividers in the circuit design will have results that are comparable to those of an unequal power divider in hfss design(compare the s-parameter plots of both hfss design and circuit design).
- A shunt resistor ($R=115.5\ \Omega$) resistor is connected between the two ports to convert an unequal power divider into an unequal power combiner.
- Except that Ports 2 and 3 are essentially isolated, the S parameter plots exhibit identical patterns to those of the Power Divider. This may be seen as S23 Readings at 1.8 GHz, the central frequency, reach very low values.

Result:

Designed and analyzed an unequal power divider/combiner.