INDIAN INSTITUTE OF INFORMATION TECHNOLOGY,
DESIGN AND MANUFACTURING,
KANCHEEPURAM

RFMCD CIRCUIT DESIGN PRACTICE MICROWAVE FILTER DESIGN

Nithesh
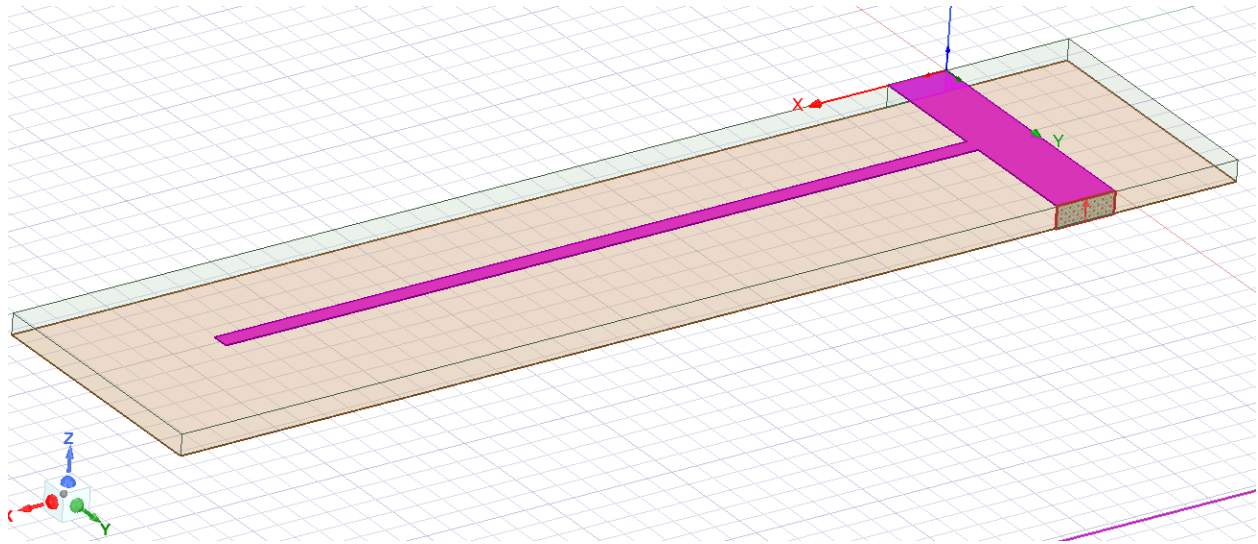**ESD19I008**

Aim:

To design and analyze band pass and band reject filters.
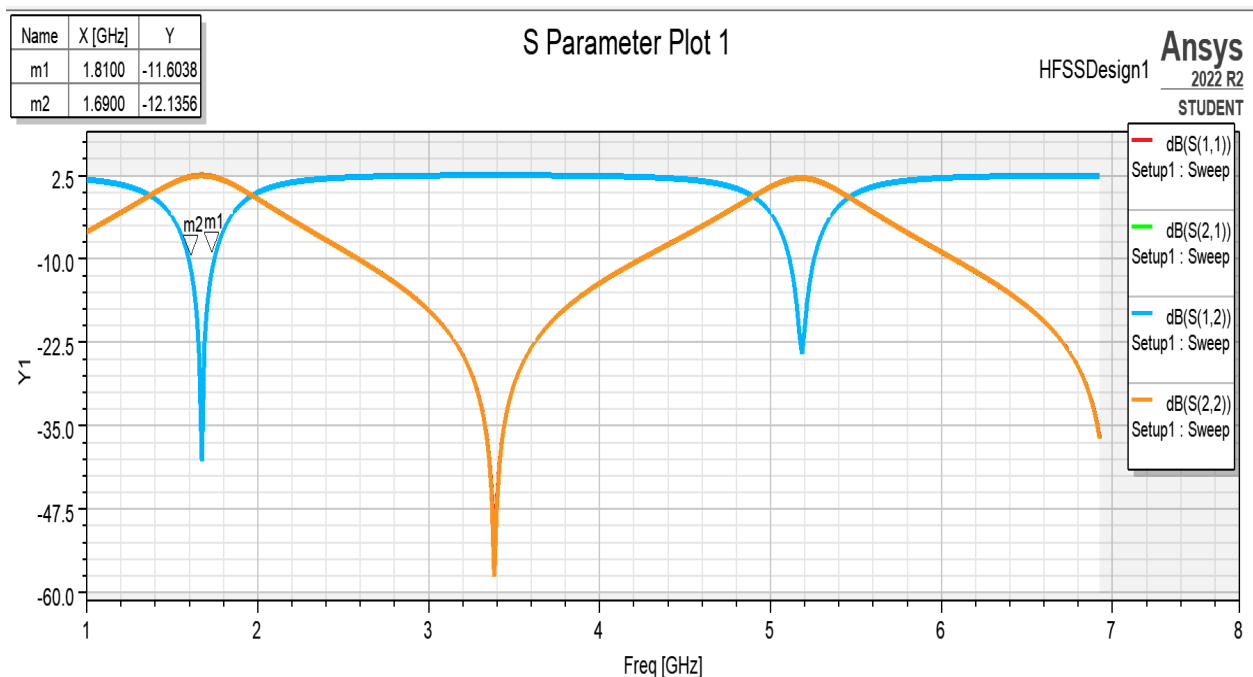
Apparatus required:

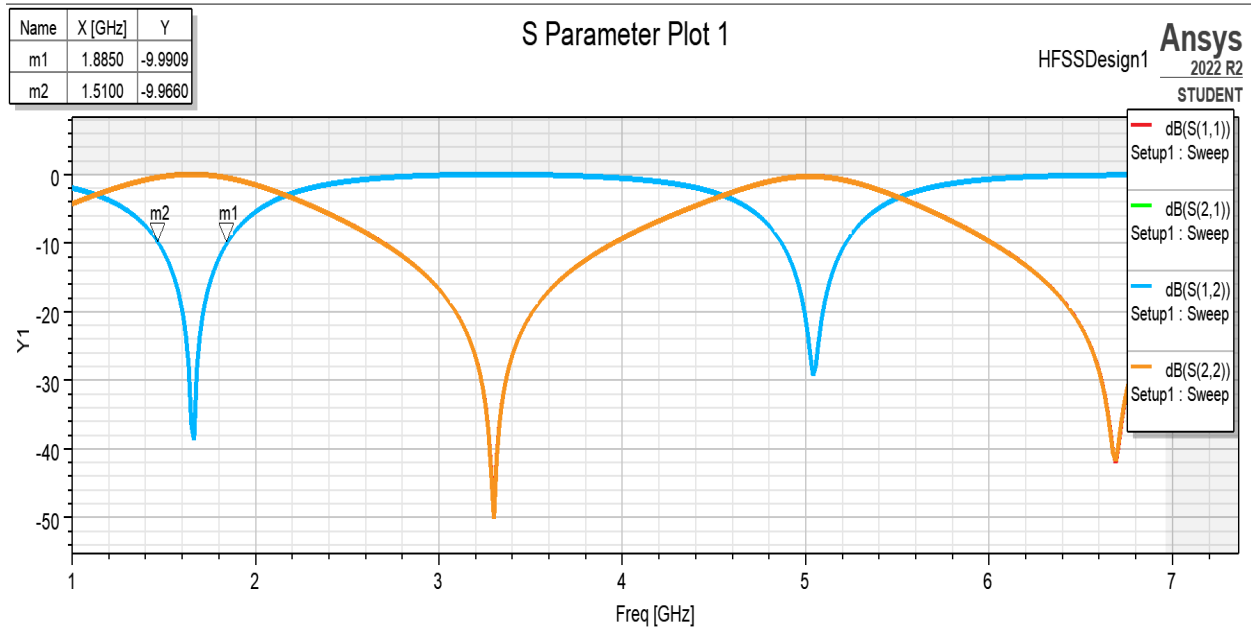ANSYS Electromagnetics Desktop

design:

Design a quarter wavelength resonator stub-based band reject filter by considering
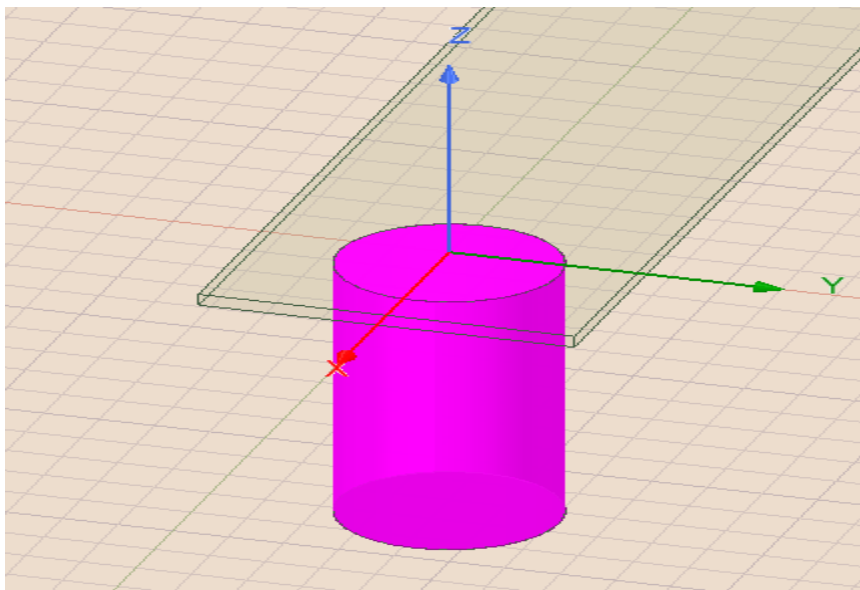# stub impedance of 100 ohm
S parameter plot:

ACTIVITY 2:
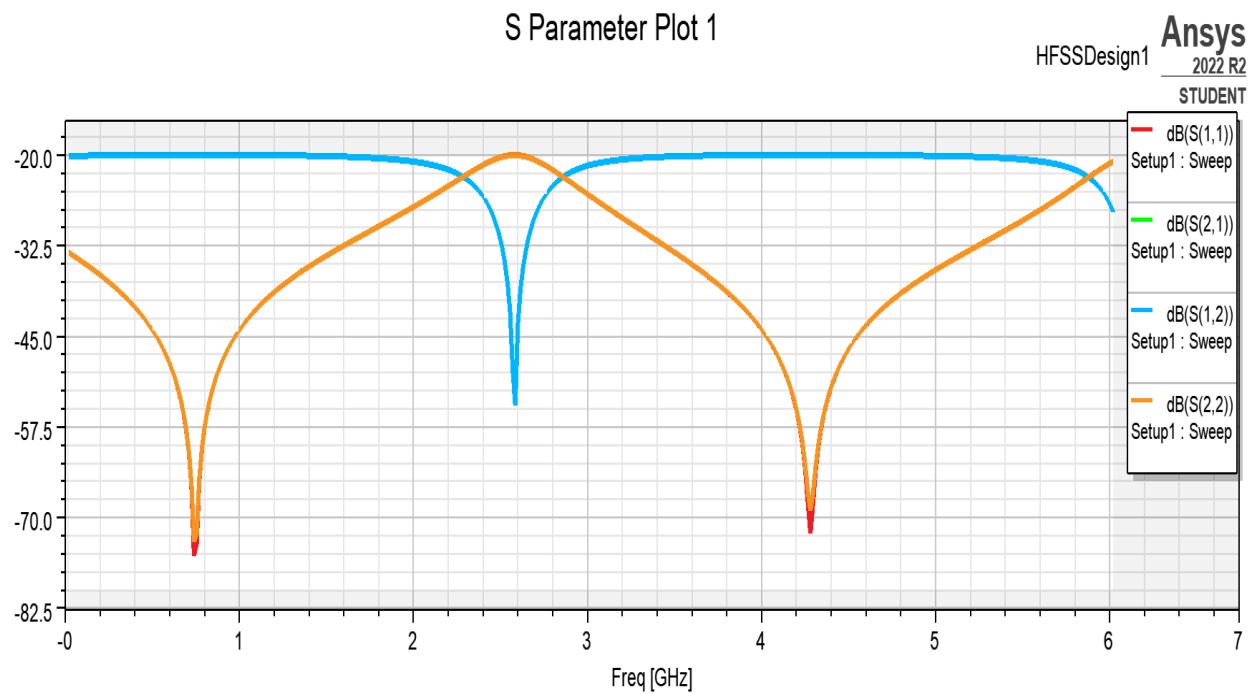
Change stub element impedance to 50 ohm

ACTIVITY 3:

Convert this filter to a band pass filter by putting a shorting post and analyze its response.
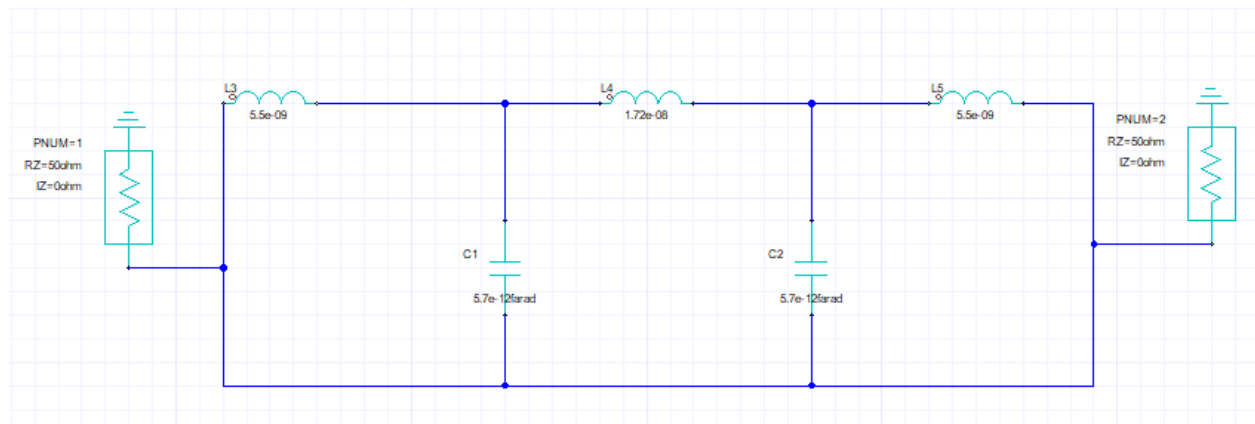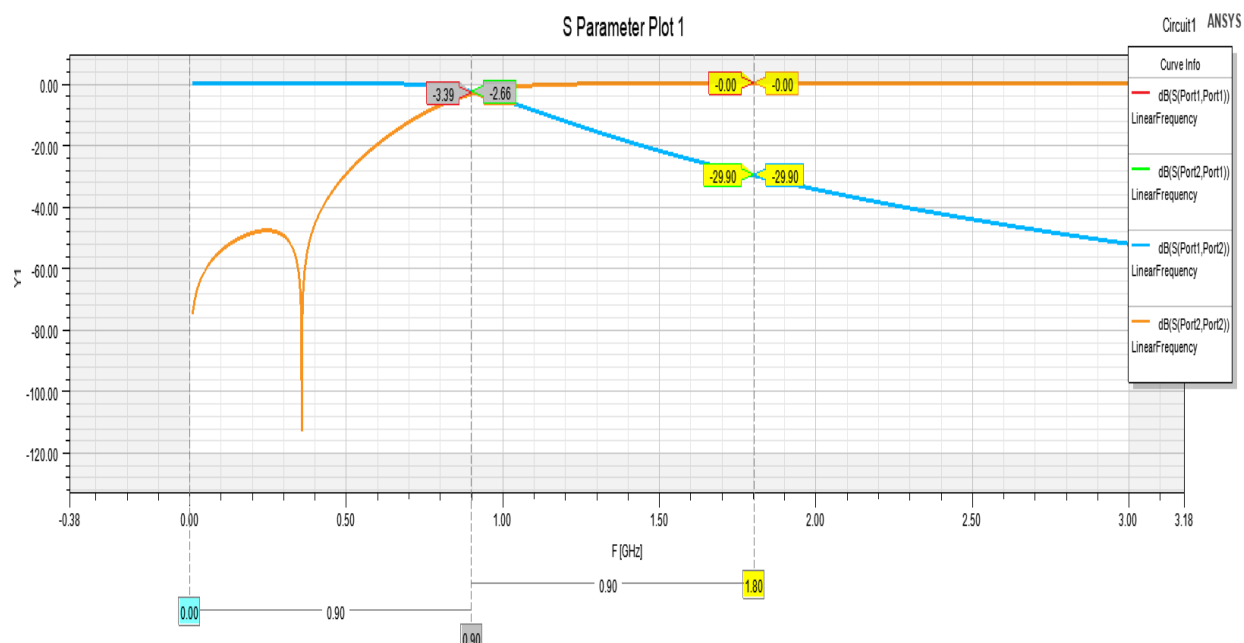
S parameter plot:

S Parameter Plot 1
HFSSDesign1
Ansys
2022 R2
STUDENT

dB(S(1,1))
Setup1 : Sweep

dB(S(2,1))
Setup1 : Sweep

dB(S(1,2))
Setup1 : Sweep

dB(S(2,2))
Setup1 : Sweep

ACTIVITY 4:
LOW PASS FILTER:

S parameter plot:

Inference:

- When stub impedance is matched to 100 or 50 ohms at 1.8Ghz it acts as a band reject filter.For every odd multiples of 1.8Ghz it acts as band reject filter rest of frequencies it acts as band pass filter.
- By putting a short it acts as a band pass filter.For every odd multiples of 1.8Ghz it acts as band pass filter rest of frequencies it acts as band reject filter.
- At 1.8 GHz we can observe 30 db attenuation in activity 4.

Result:

Designed and analyzed band pass and band reject filters.