NETWORK LAB PROJECT

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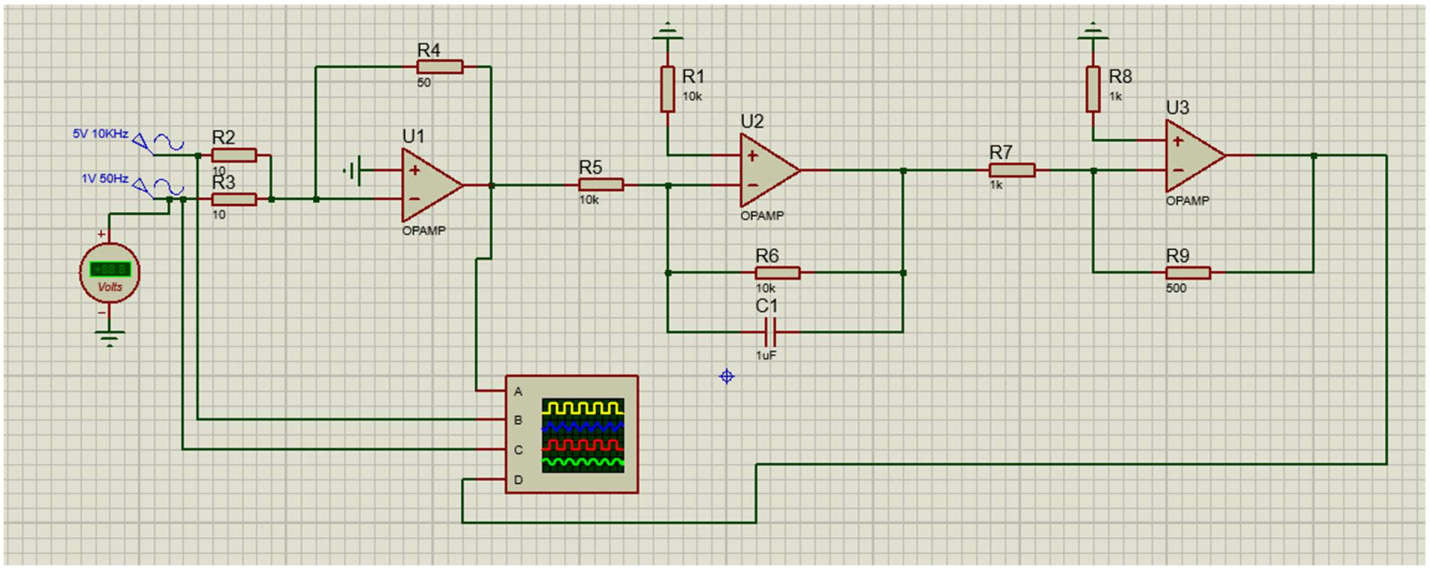
PROJECT: **SIMULATION OF DEMODULATION OF CARRIER WAVE USING ACTIVE LOW PASS FILTER**

SIMULATION SOFTWARE USED: 1) PROTEUS (FOR OSCILLOSCOPE)

2) ALTIUM CIRCUIT MAKER (PCB FABRICATION)

3) TINA (FOR FREQUENCY DOMAIN ANALYSIS)

PROTEUS SIMULATION :



COMPONENTS

R1 = 10 KOhm IC741 – Op Amp X 3

R2 = 10 Ohm C1 = 1uF

R3 = 10 Ohm

R4 = 50 Ohm

R5 = 10 KOhm

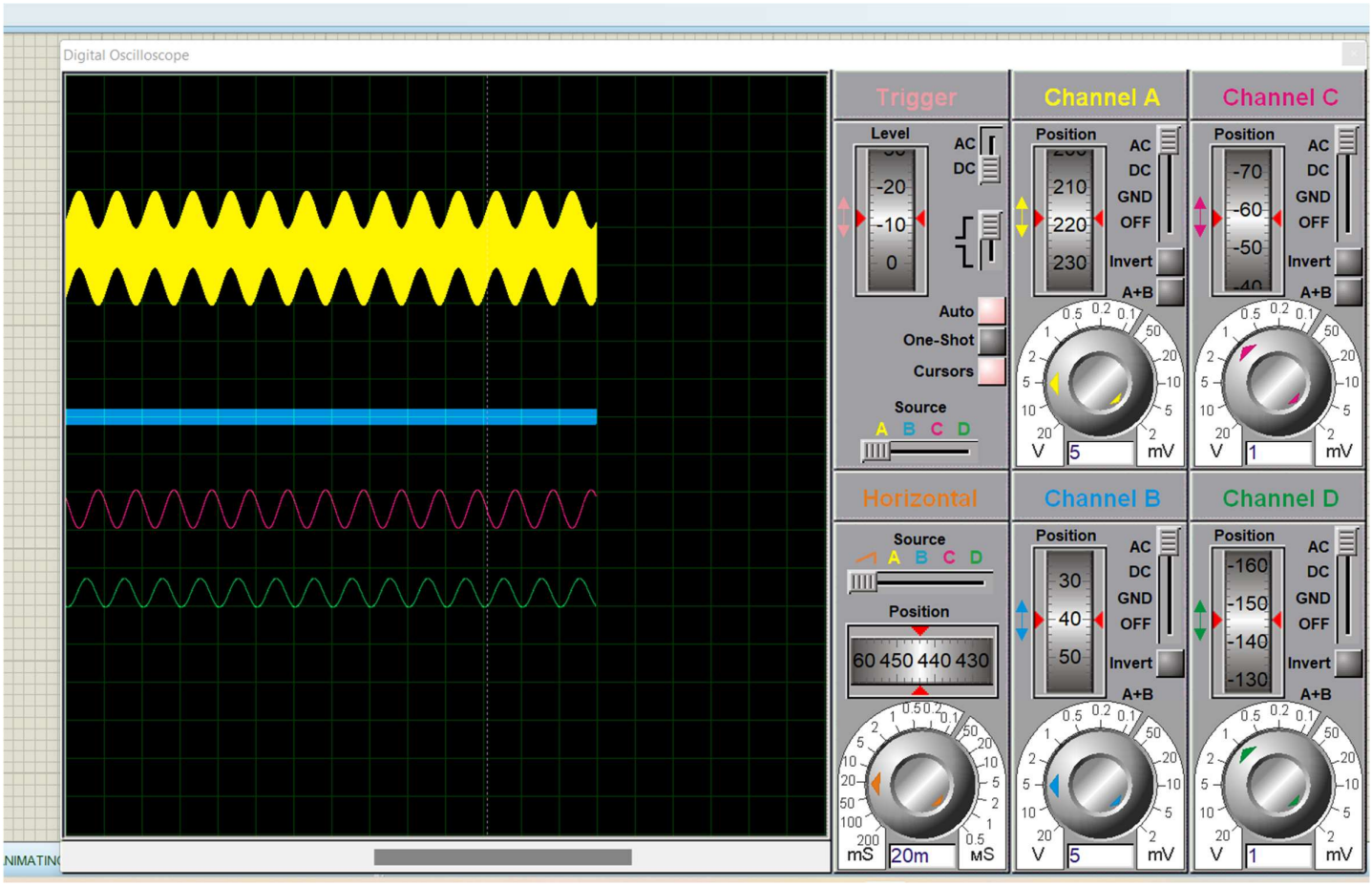
R6 = 10 KOhm

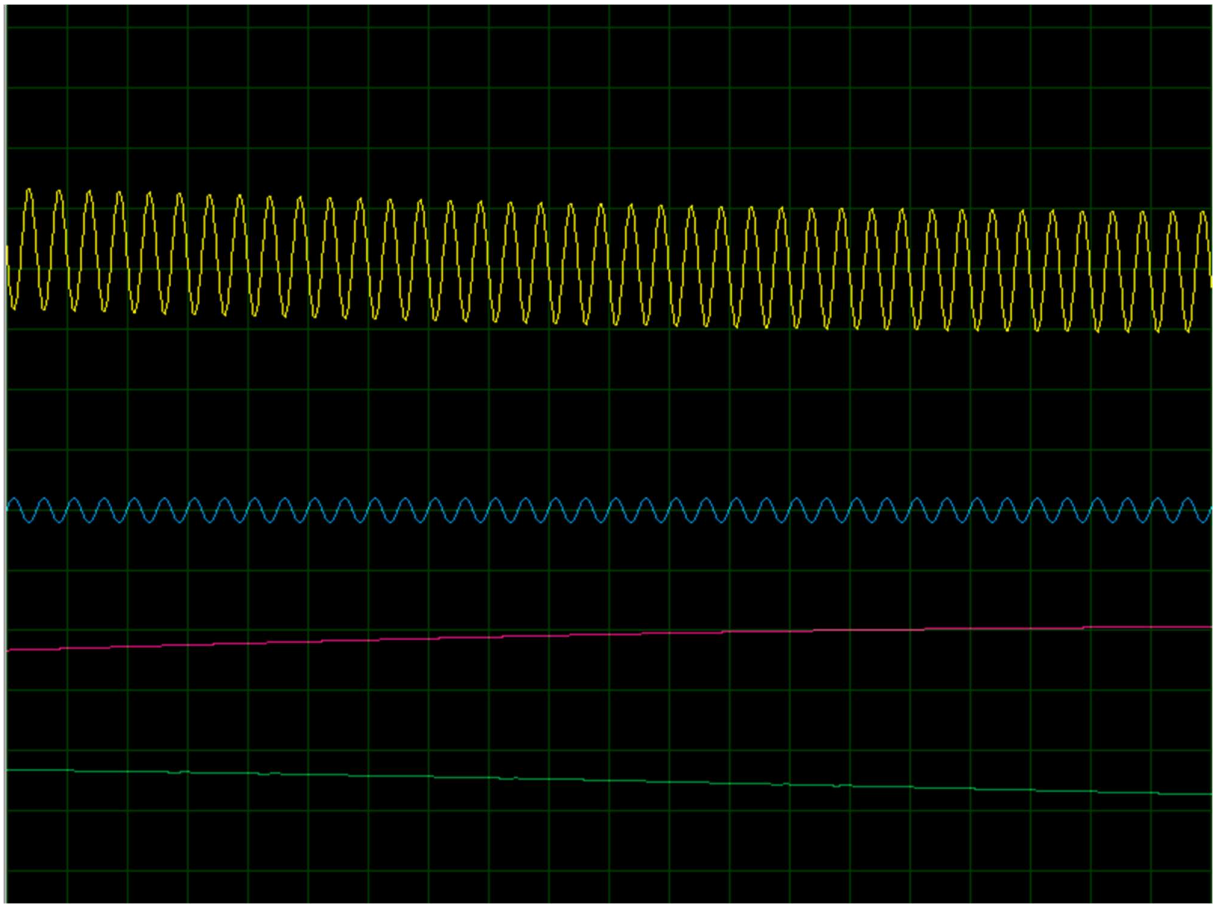
R7 = 1 KOhm

R8 = 1 KOhm

R9 = 500 Ohm

OSCILLOSCOPE :





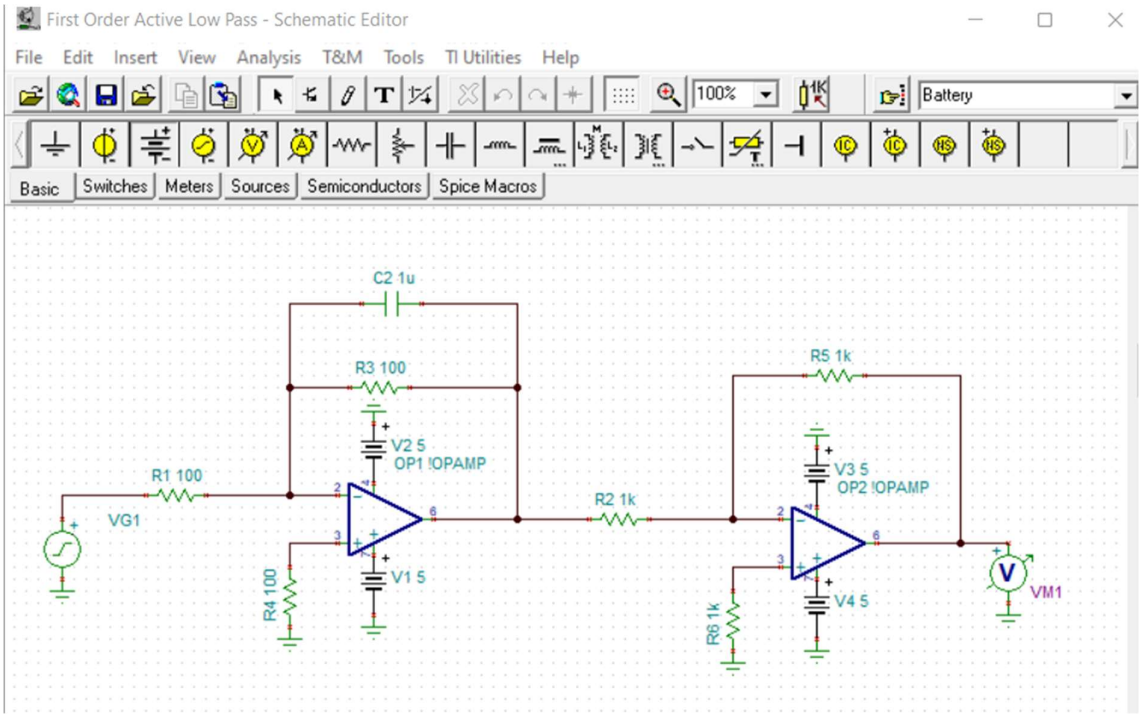
YELLOW SIGNAL = (Blue + Pink) Signal = Modulated Wave

BLUE SIGNAL = Carrier wave

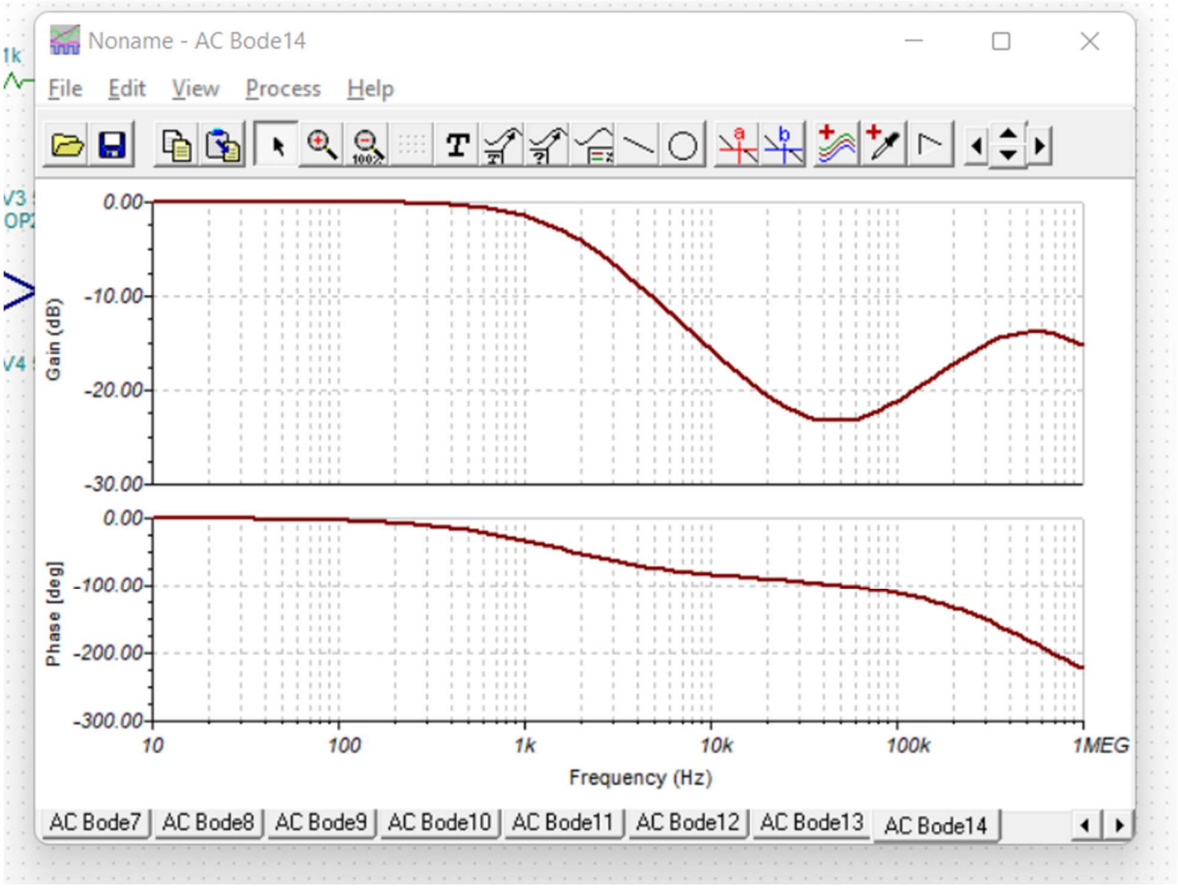
PINK SIGNAL = Original Signal

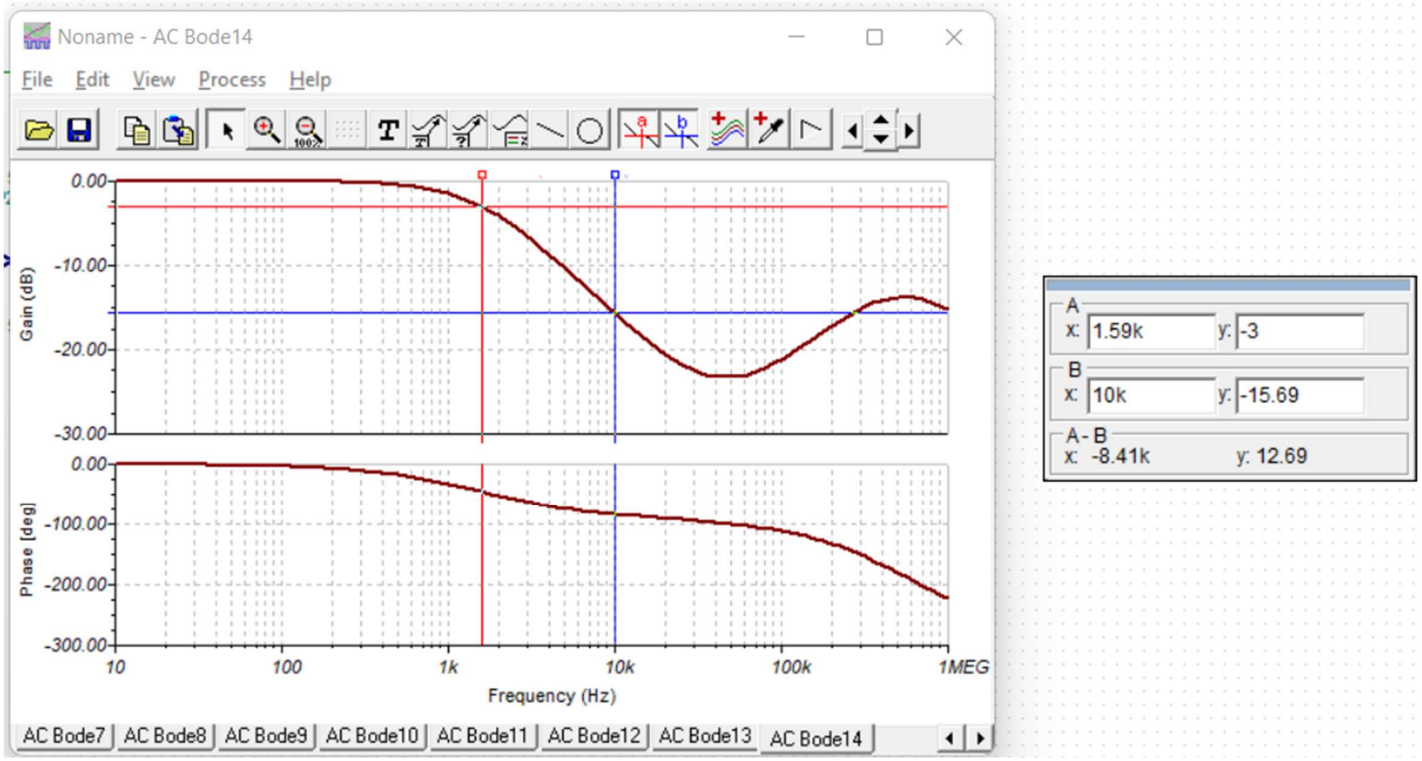
GREEN SIGNAL = Demodulated Signal (After filtering)

TINA (FREQUENCY DOMAIN ANALYSIS)



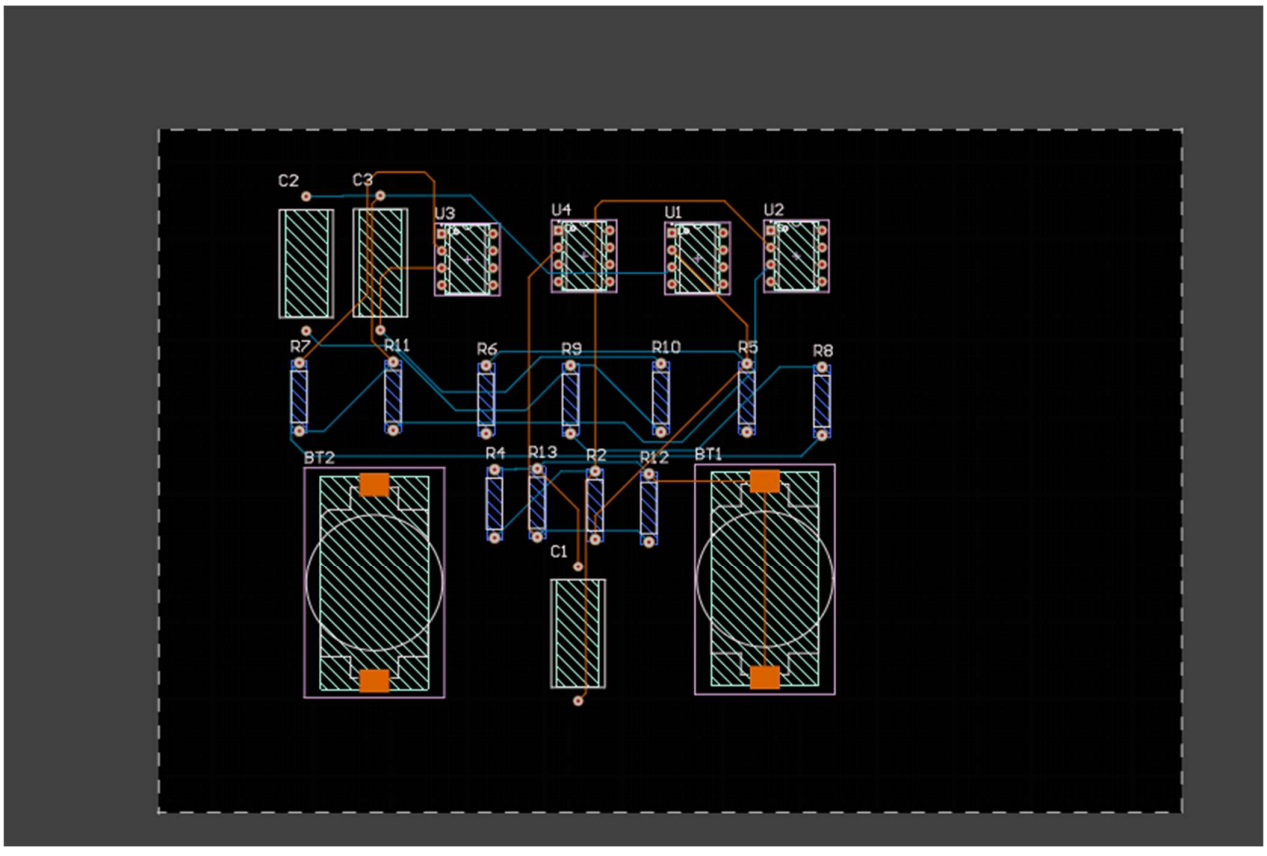
PLOT

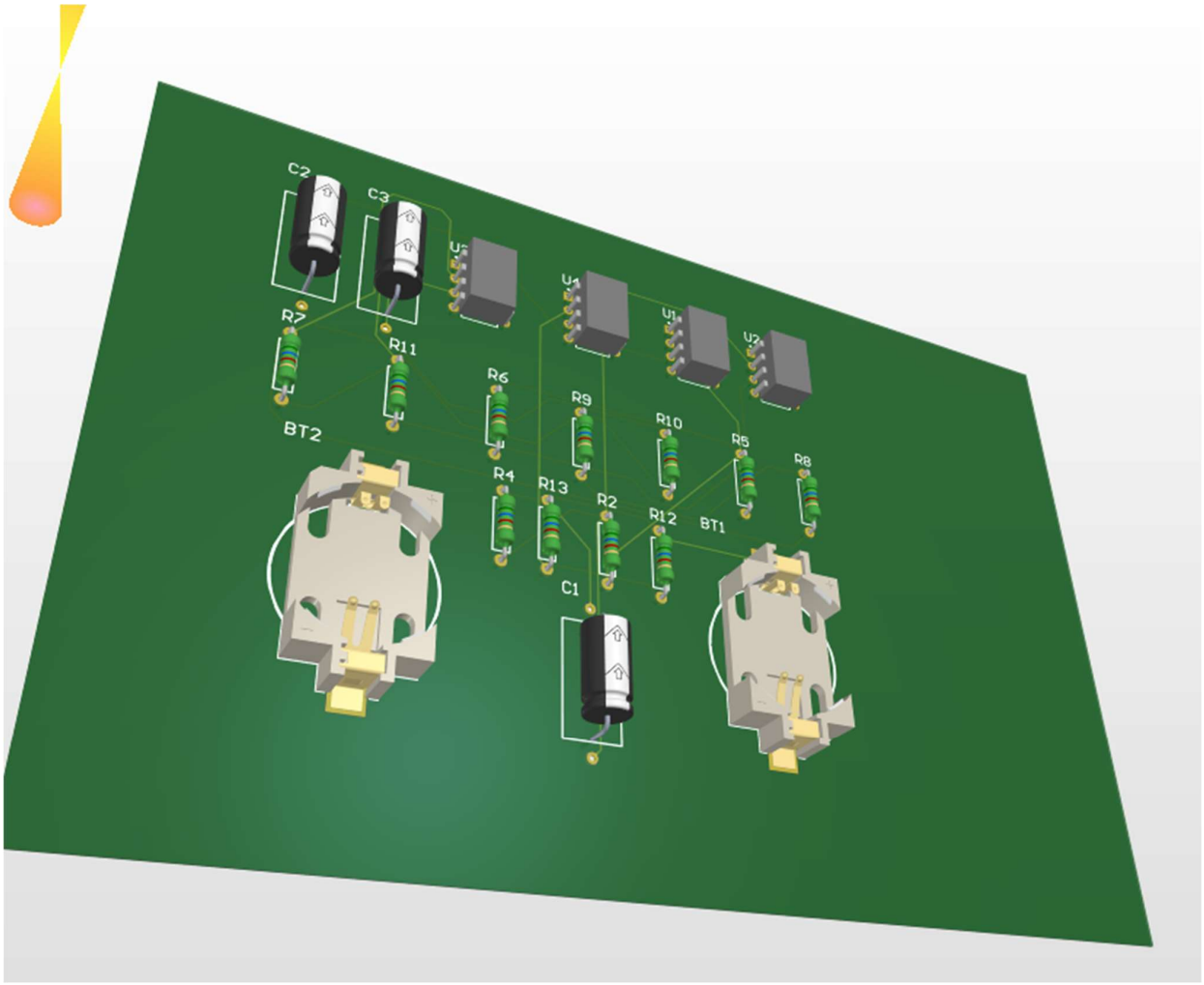


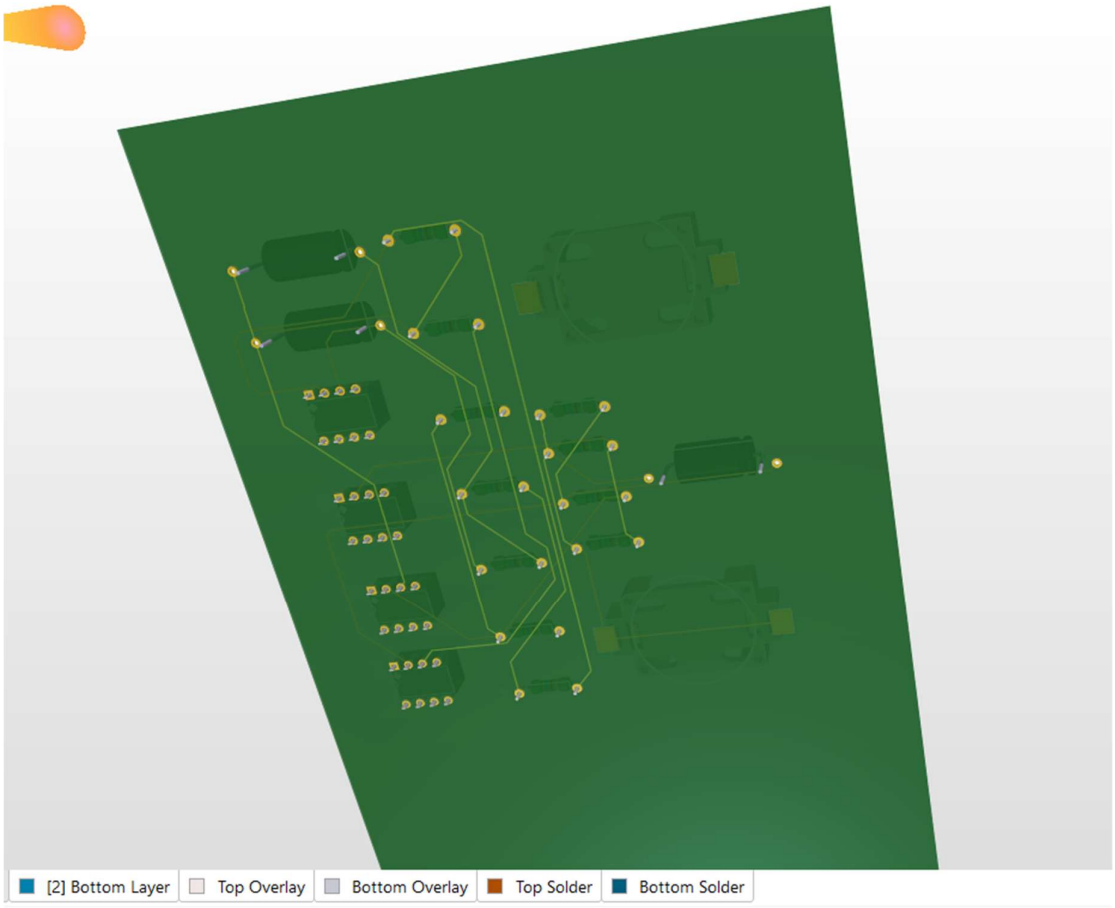


CUT OFF FREQUENCY = 1.59k (At -3dB Value)

PCB Printed Board Design in ALTIUM CIRCUIT MAKER

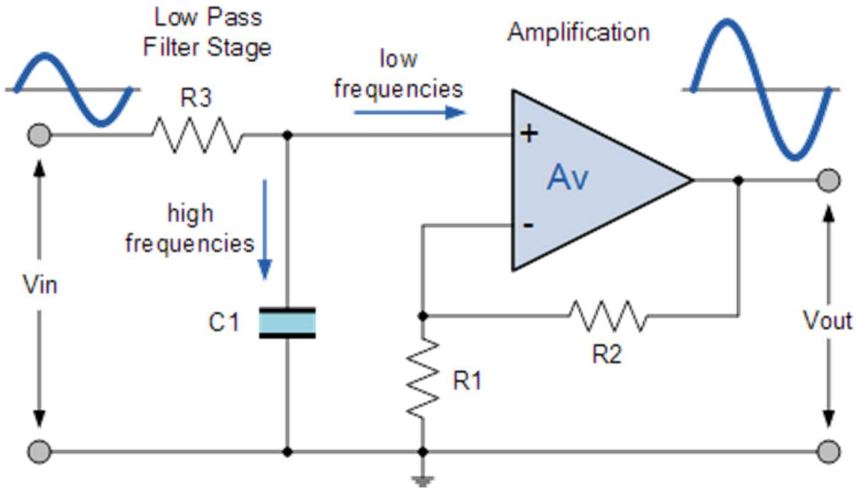



C2
C3
U3
U4
U1
U2
R7
R11
R6
R9
R10
R5
R8
BT2
R4
R13
R2
R12
BT1
C1


[2] Bottom Layer
Top Overlay
Bottom Overlay
Top Solder
Bottom Solder

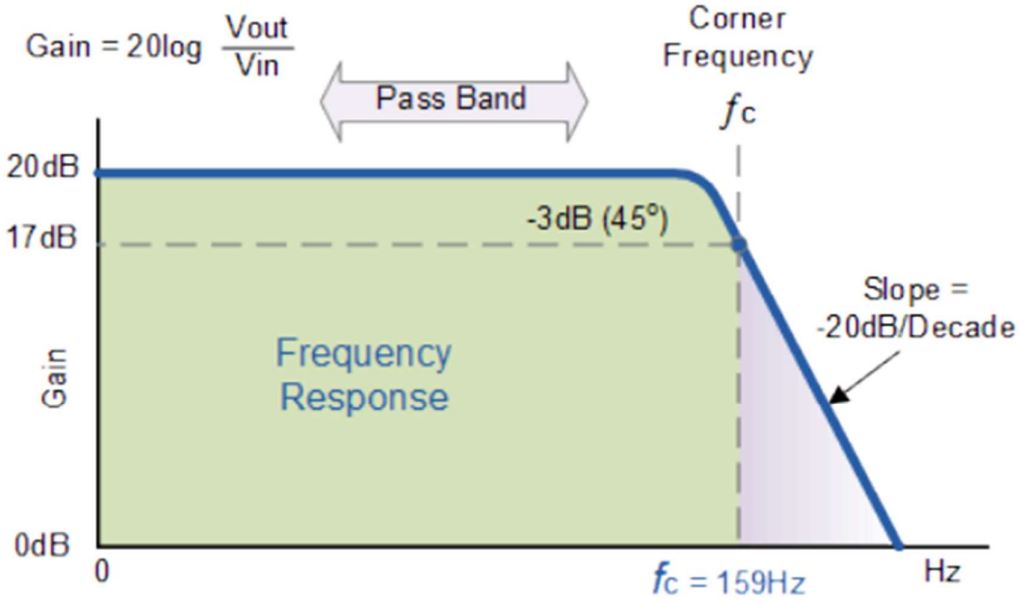
THEORY:

Demodulation is defined as **extracting the original information-carrying signal from a modulated carrier wave**. A demodulator is an electronic circuit that is mainly used to recover the information content from the modulated carrier wave. There are different types of modulation, and so are demodulators.



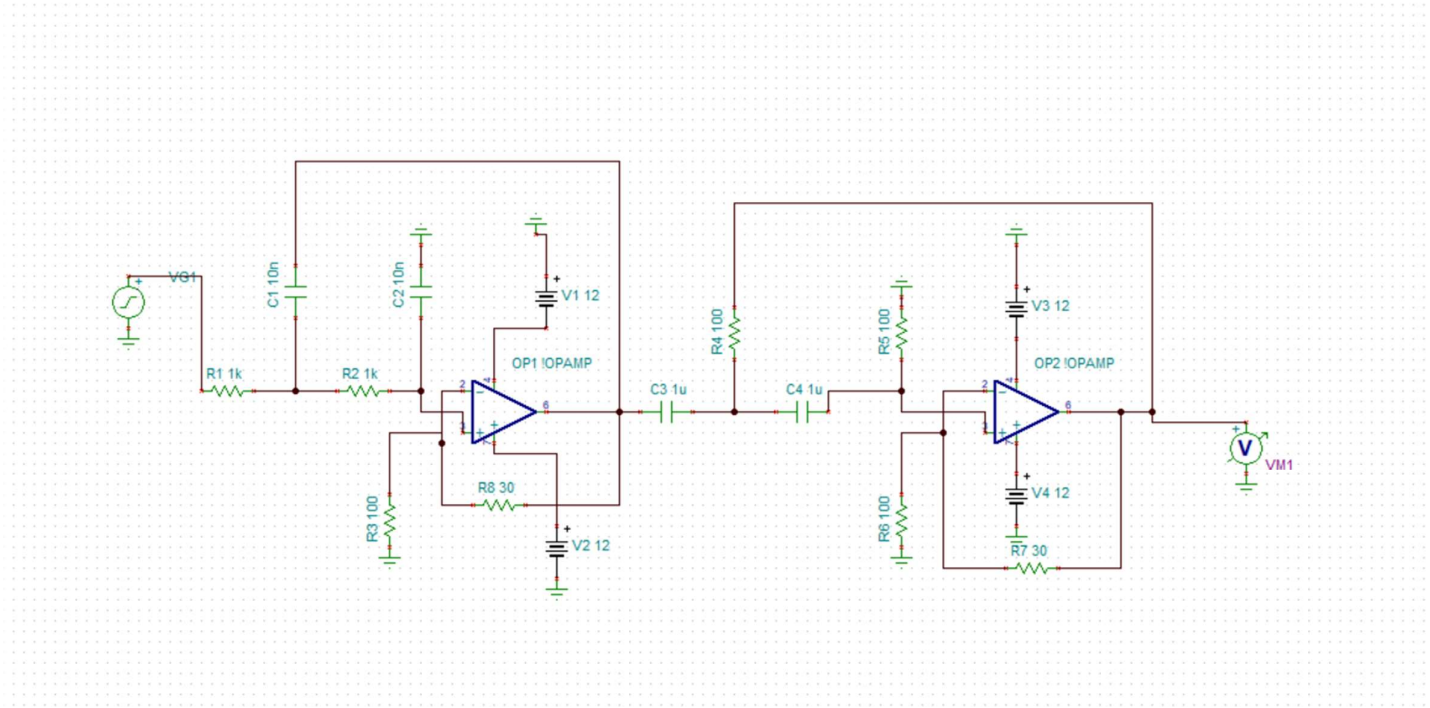
USES:

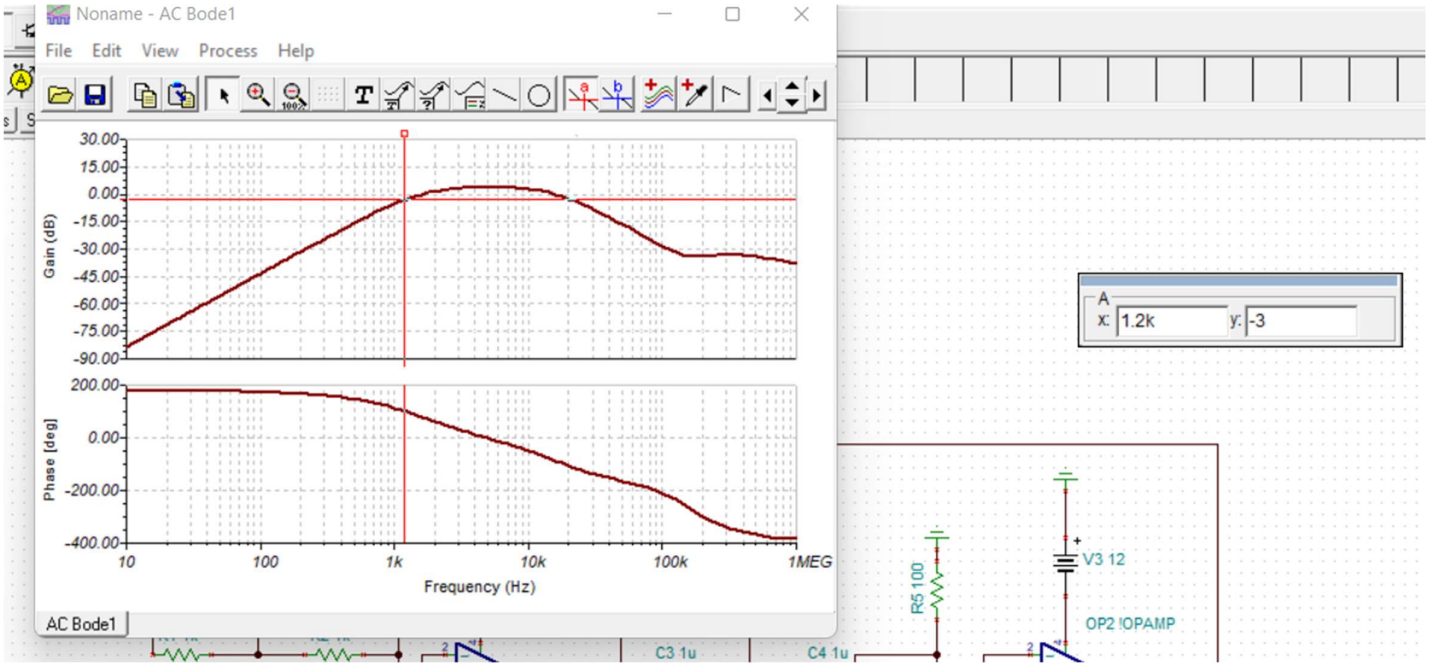
1) **TO REMOVE HIGH FREQUENCY NOISE**
2) **FOR DEMODULATION PURPOSE**



ADDITIONAL CIRCUITS (MADE ON TINA)

SECOND ORDER BAND PASS





SECOND ORDER BAND REJECT