1) Analog Signal Transmission

2) AM / DSB-SC

3) FM / PM

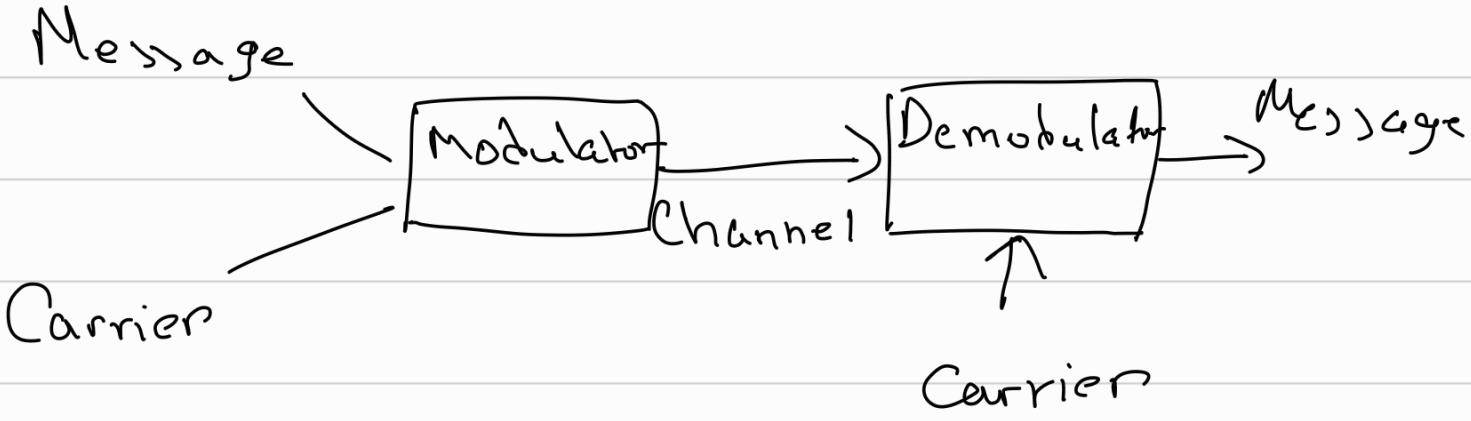
4) PCM / DM

5) Multiplexing

6) Digital Modulation

Exp -01

03/12/24

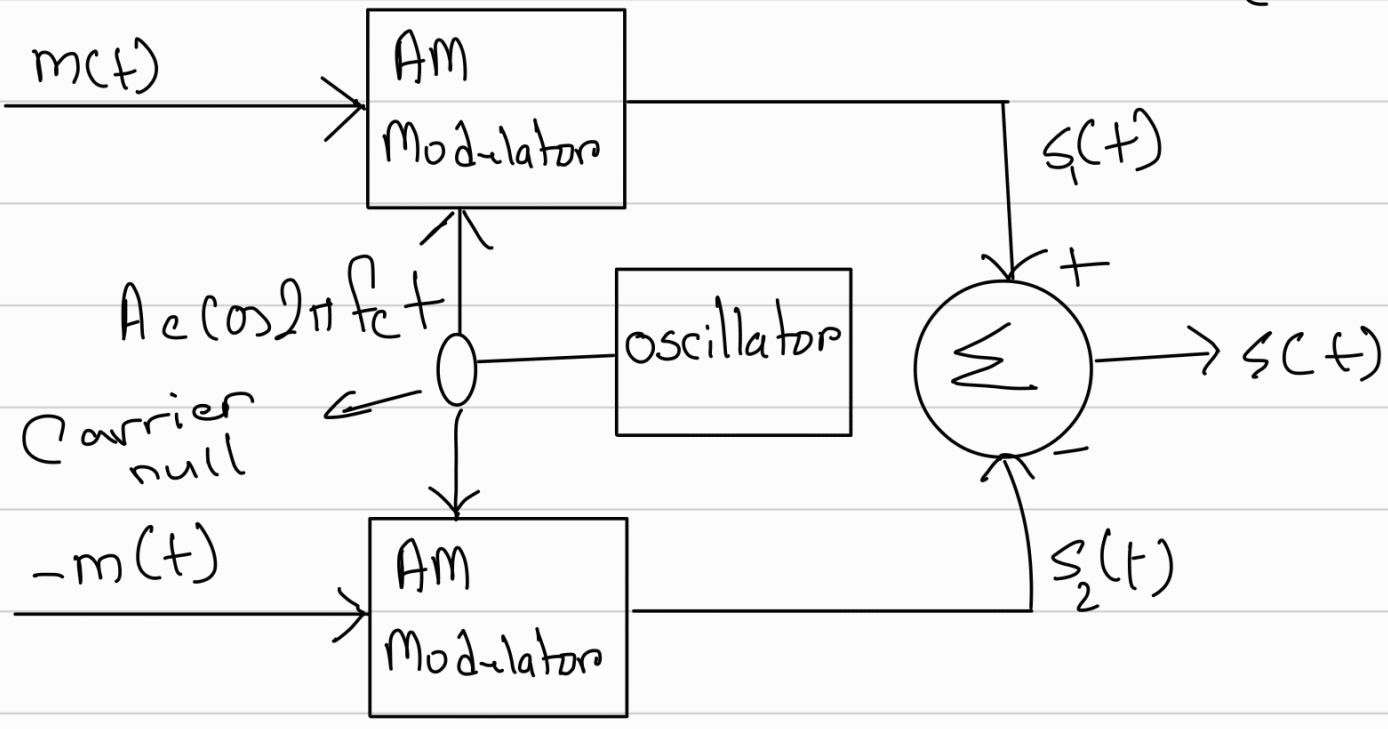


Exp-02

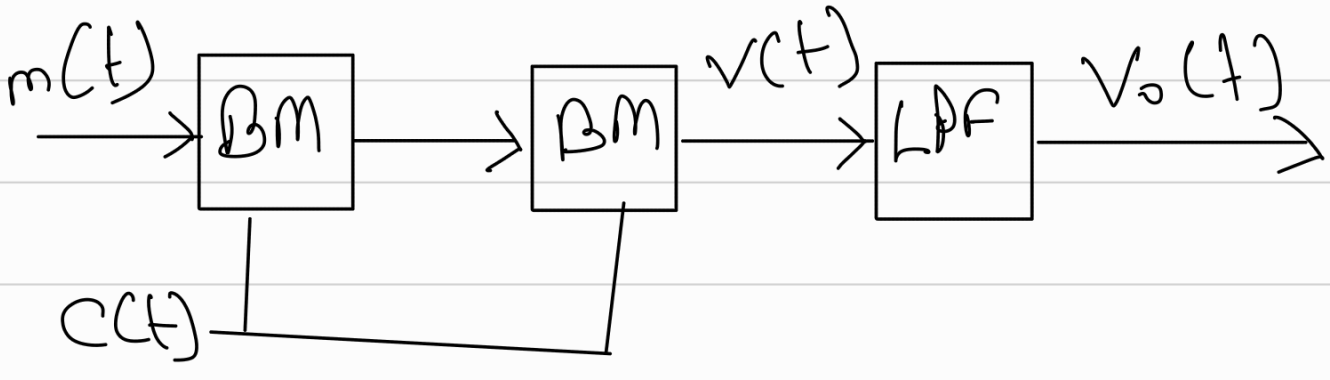
07/12/24

Study of amplitude modulation and demo-dulation.

$$s_1(t) = A_c[1 + k_a m(t)] \cos 2\pi f_c t$$



$$s(t) = s_1(t) - s_2(t)$$



$$\mu = \frac{A_{max} - A_{min}}{A_{max} + A_{min}}$$

Carrier null → middle → DSBSC

Under
100%.
Over

Carrier frequency - 302.9 kHz

DSB-SC
100% → Message → 1.767 kHz

Under Mod

$A_m = 800\,mV/2 = 400\,mV$
$f_m = 1.75\,kHz$
$A_c = 4.4\,V/2 = 2.2\,V$
$f_c = 298.8\,kHz$

$A_{max} = 5.04/2 = 2.52$

$A_{min} = 1/2 = 0.5$

$$\mu = \frac{2.52 - 0.5}{2.52 + 0.5} = 0.669$$

100% mod

$\mu = 1$

$A_m = 1.08/2$ V

$f_m = 1.762$ KHz

$A_c = 4.44/2$ V

$f_c = 301.5$ KH

OverMod

$A_m = 1.6/2$ V

$f_m = 1.75$ kHz

$A_c = 4.48/2$ V

$f_c = 300.32$ kHz

$A_{max} = 5.28/2$ V

$A_{min} = 2.4/2$ V

$$\psi = \frac{2.64 + 1.2}{2.64 - 1.2} \geq 2.667$$

DSDSC

$A_m = 1.8/2$ // $3.76/2$ V

$f_m = 1.753$ KHz

$A_1 = 4.56/2$ V

$f_c = 300.3$ KHz

↳ PtoP → $4.96/2$ V

Amax

$5.36/2$ V