

Practicals in

Analog Communication

Prepared by,
Rishikesh J. Sutar

SSB modulation:

Mathematical expression for SSB modulation:

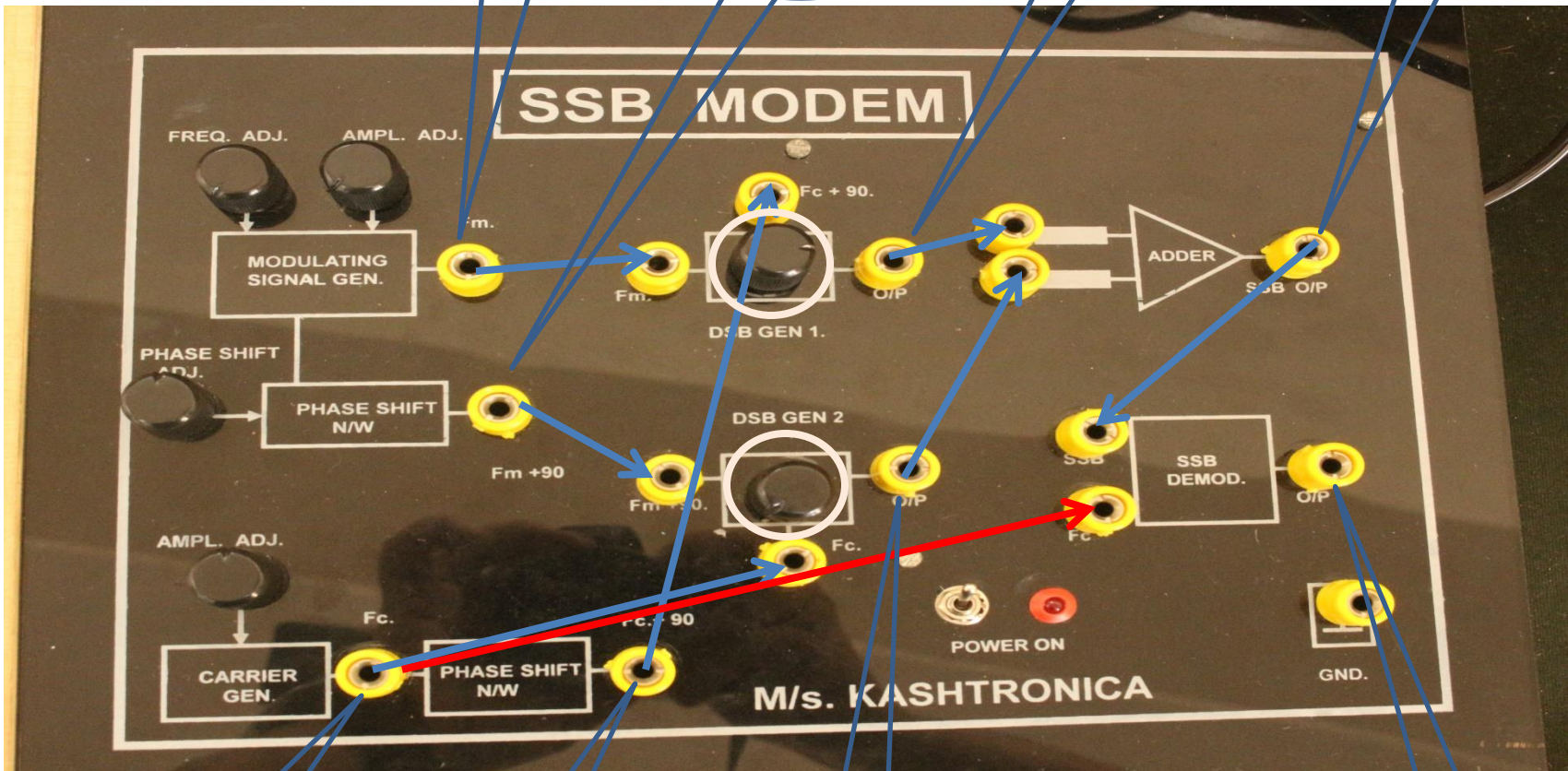
1. In theory,

$$\Phi_{SSB}(t) = (\text{modulating signal} * \text{carrier signal}) \pm \\ (90^\circ \text{ phase shifted modulating signal} * 90^\circ \text{ phase shifted carrier signal})$$

2. On experimental board,

$$\Phi_{SSB}(t) = (\text{modulating signal} * 90^\circ \text{ phase shifted carrier signal}) \pm \\ (90^\circ \text{ phase shifted modulating signal} * \text{carrier signal})$$

SSB Modem expt. board:



Modulating signal 3-5KHz
Adjust 90° phase shifted Modulating signal 3-5KHz
DSBSC1 signal
SSB signal

Carrier signal
 90° phase shifted Carrier signal
DSBSC2 signal
Recovered modulating signal

Apply modulated signal from arbitrary generator

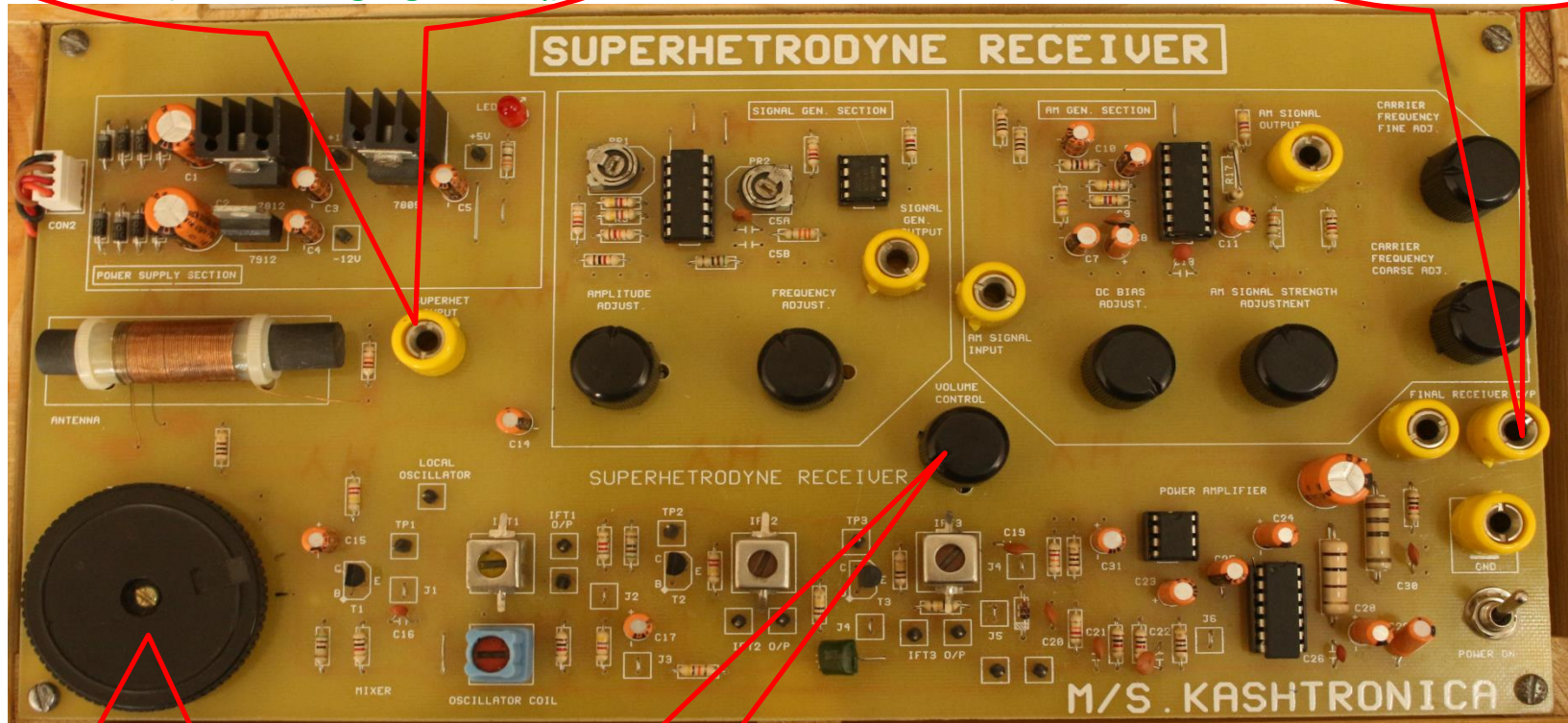
625KHz, 200mV_{p-p}, 30%

(Modulated signal parameters),

400Hz (Modulating signal freq)

1. **Selectivity:** Vary modulated signal freq and measure the o/p vtg. on DSO

Connect Rx output point to DSO



Adjust tuning control so as to get maximum output voltage sinusoidal signal on DSO

Adjust volume control so as to get sinusoid of 1.78V_{p-p} voltage on DSO

3. **Sensitivity:** Vary modulated signal freq and Adjust modulated signal vtg. So as to get 1.78V_{p-p} o/p vtg. on DSO.

2. **Fidelity:** Vary modulating signal freq (390, 392, 394,, 410Hz) and measure the o/p vtg. on DSO.

Superheterodyne Receiver