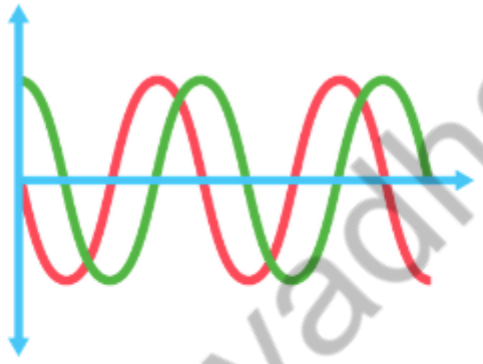
Course : RF Microelectronics



Lecture 4: Mixers

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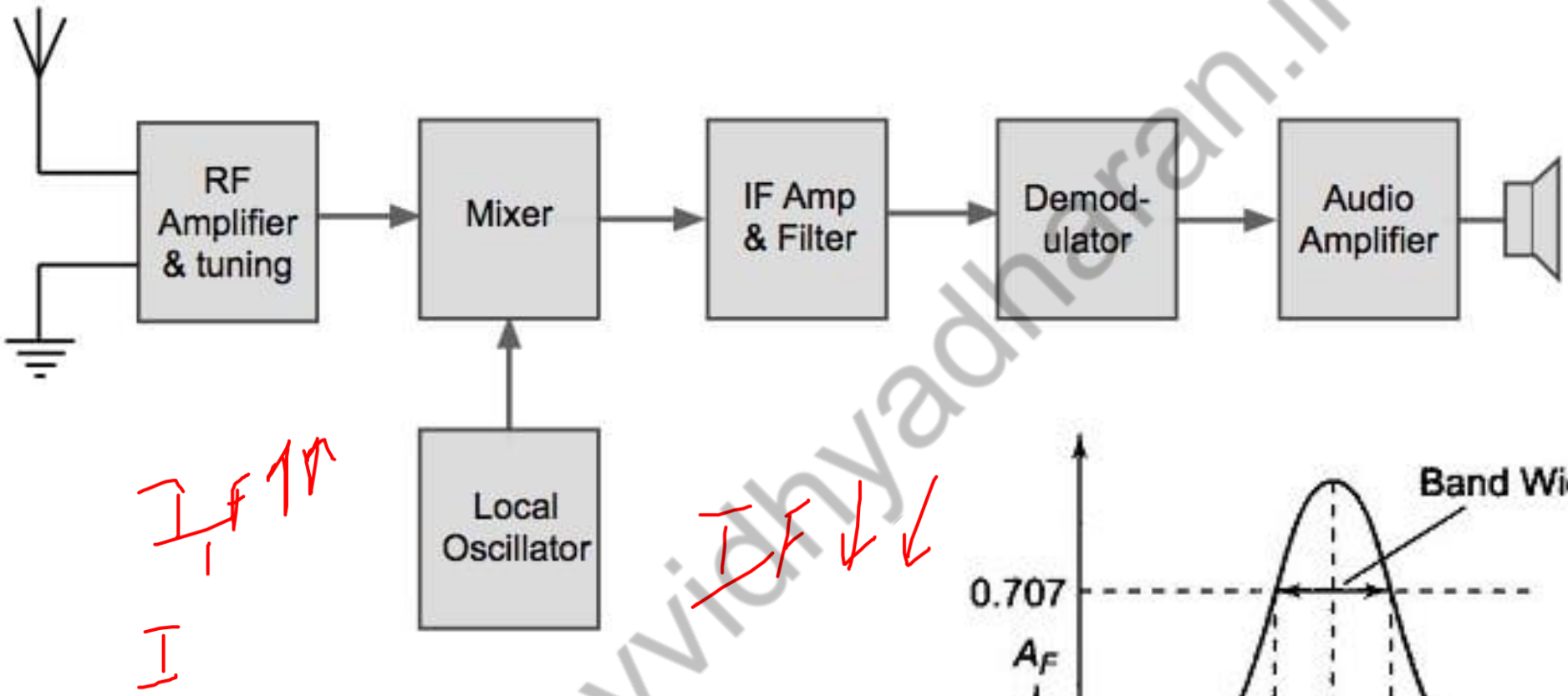
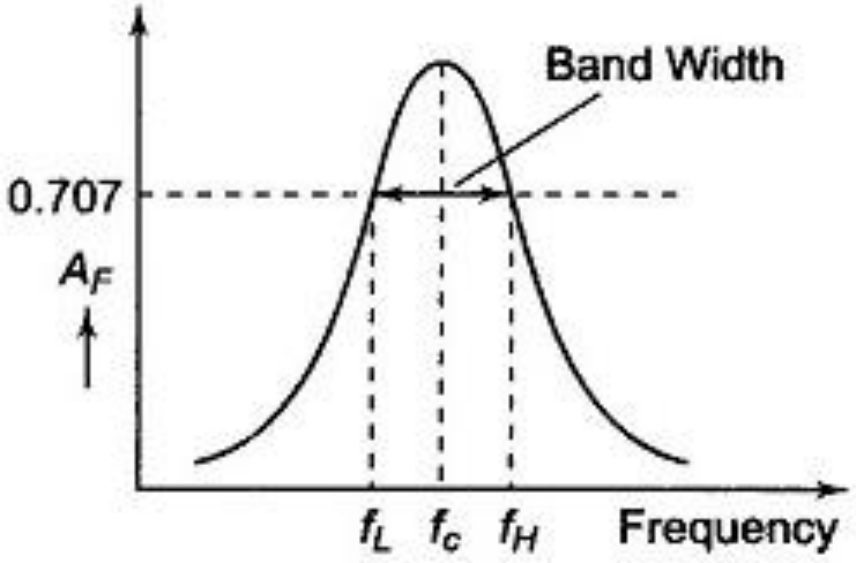
Mixers



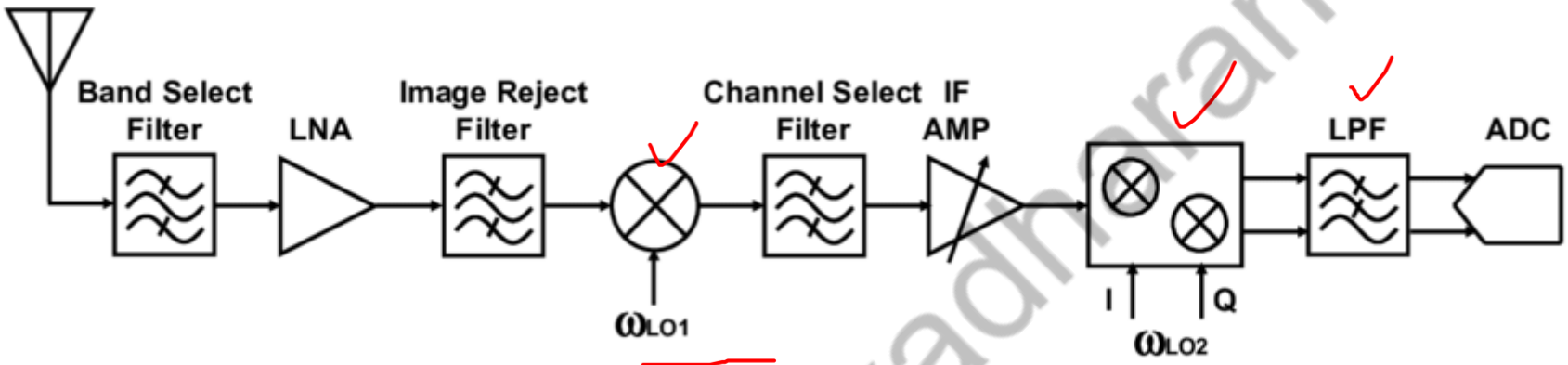


$$Cos\ A * Cos\ B = \frac{1}{2}\ [\ Cos(a+b) - Cos(a-b)]$$

$100\ MHz\ RF\ * 90\ MHz\ LO = 10\ MHz\ IF\ + 190\ MHz\ (To\ be\ filtered)$

$80 MHz\ RF\ (image\ freq) * 90\ MHz\ IF = 10\ MHz\ + 170\ MHz\ (To\ be\ filtered)$

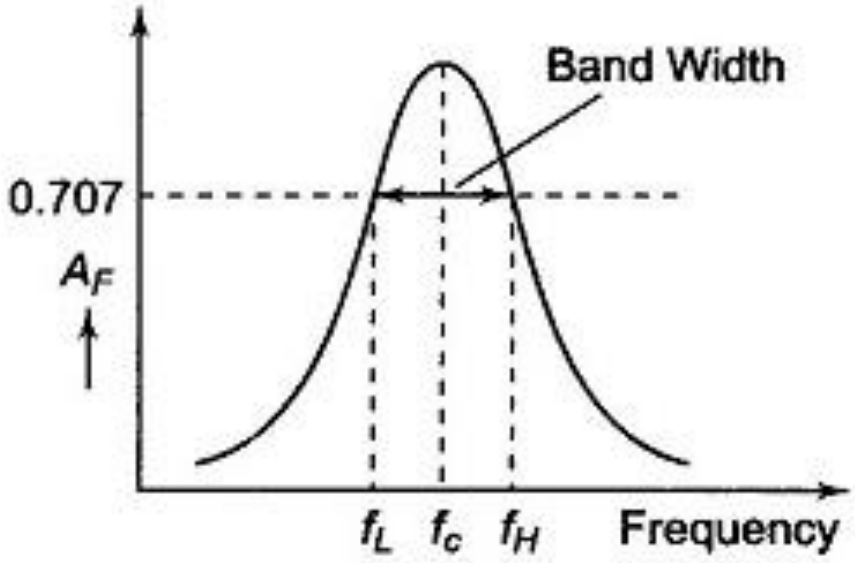
Mixers

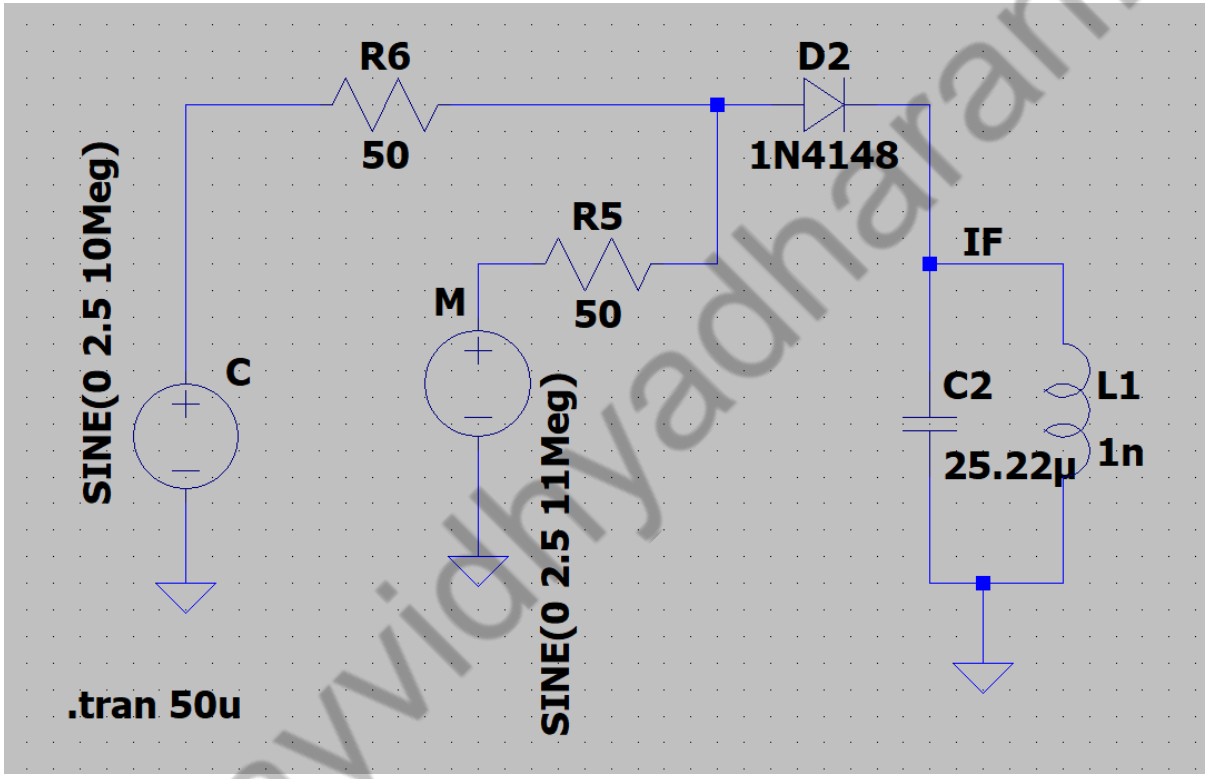


$$Cos\ A * Cos\ B = \frac{1}{2}\ [\ Cos(a+b) - Cos(a-b)]$$

$100\ MHz\ RF\ * 90\ MHz\ IF = 10\ MHz\ IF1$

$10\ MHz\ RF\ * 9.5\ MHz\ IF = 500\ KHz\ IF2$





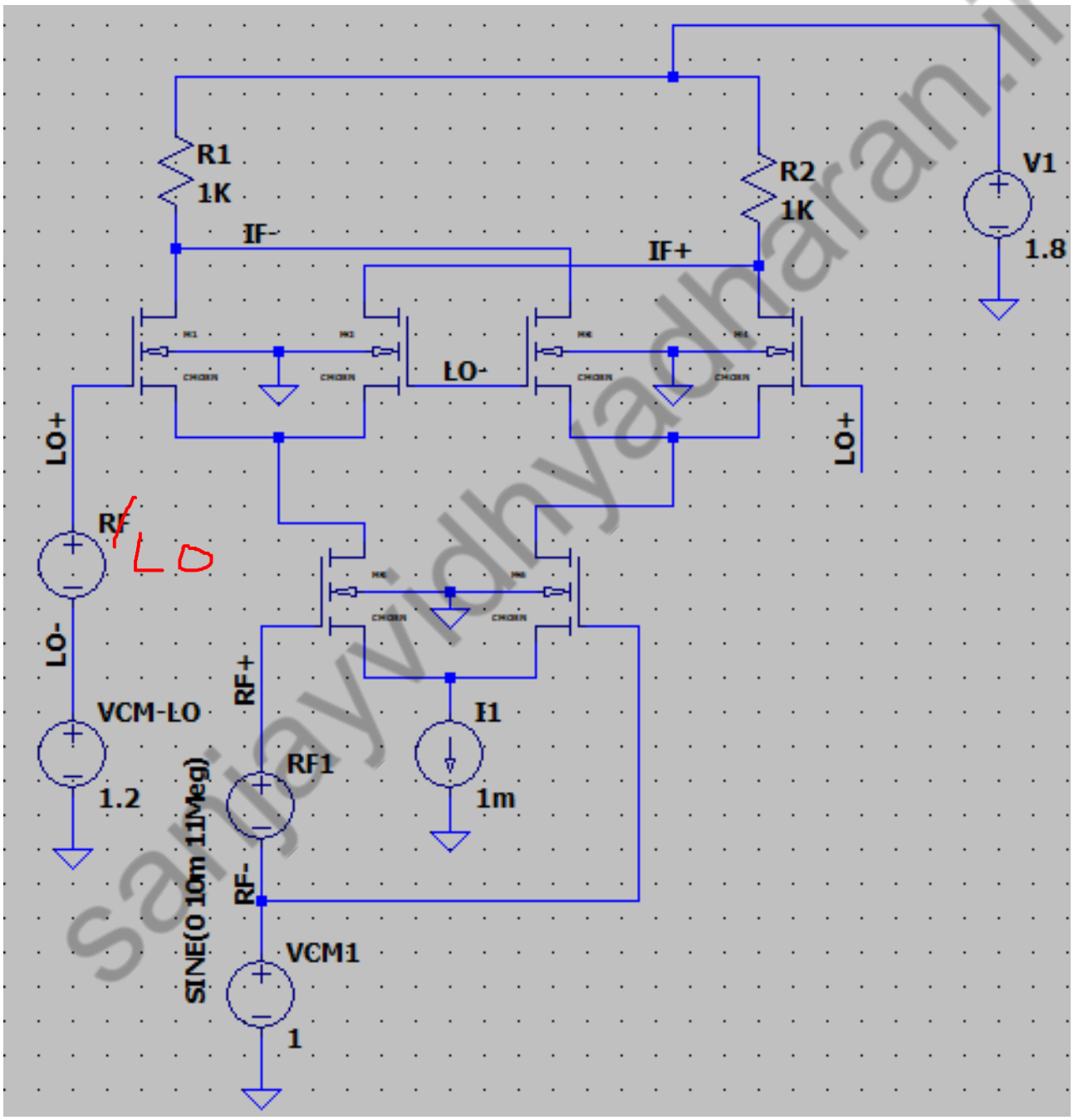
$$y(t) \approx \alpha_0 + \alpha_1 x(t) + \alpha_2 x^2(t) + \alpha_3 x^3(t) + \alpha_4 x^4(t) + \ldots$$

$$(Cos\ A + Cos\ B)^2$$

$$2\ Cos\ A\ CosB$$

$$Cos\ A * Cos\ B = \frac{1}{2}\ [\ Cos(a+b) - Cos(a-b)]$$

Gilbert Mixer



Thankyou