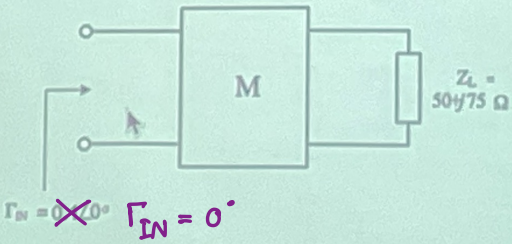
QUIZ 2

Design the matching circuit M at the operating frequency of 2.4 GHz by using transmission line and stub matching. (50 ohm system)



Please submit to classroom
January 10, 2023 (7 pm)

นาย โสภณ สุขสมบูรณ์
6201071631788 sec.1 Commu Cir Design
(PAK)

$z_{in} = 50\Omega$, $z_{in} = \frac{z_{in}}{z_0} = \frac{50\Omega}{50\Omega} = 1 \rightarrow y_{in} = 1$

$z_L = \frac{z_L}{z_0} = \frac{50+j75}{50} = 1+j1.5 \rightarrow y_L = 0.31-j0.46$

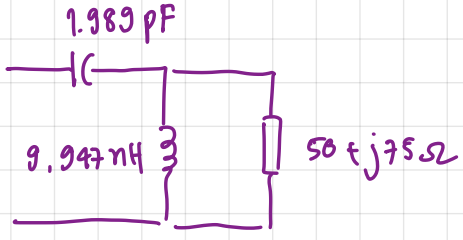
Denormalized

$jX_L = (1+j1.5)-(1-j1.5) = j3 \rightarrow jX_L = j3(50) = j150$

$jX_C = (1+j0)-(1-j1.5) = j1.5 \rightarrow jX_C = j1.5(50) = j75$

$C_{series} = \frac{b}{2\pi f z_0} = \frac{1.5}{2\pi(2.4\times10^9)(50)} = 1.989\ pF$

$L_{shunt} = \frac{xZ_0}{2\pi f} = \frac{3\times50}{2\pi\times2.1\times10^9} = 9.947\ nH$



The Complete Smith Chart