ECE 443 APPLIED ELECTRONICS - LAB 5 FRIIS TRANSMISSION EQUATION

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Abstract—This lab experiment aims to experiment the Friis Transmission equation.

1. METHODS

Parts: 2 dipole Antennas, 10mH inductor.
1. connect the following circuit in Fig.1.
2. Friis equation: $P_r = P_t G_t G_r \left(\frac{\lambda}{4\pi R^2}\right)^2$

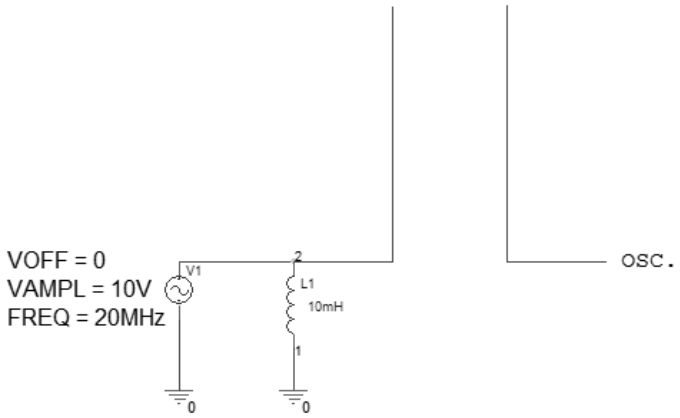

Figure 1. a)Circuit Diagram

3. Effect of transmitter power: Increase the transmitter voltage from the function generator from 2 to 10 V in steps of 2. Draw the Vt vs. Vr

graph. Remember that power is proportional to voltage square. Then draw the Pt vs. Pr. graph.
4. Effect of polarization and antenna gain: Rotate one of the antenna horizontally and measure Vr. Rotate both antennas horizontally and measure Vr. Make comments.
5. Effect of distance: Take the receiver antenna farther away in steps of 50cm from the transmitter and measure Vr. Draw the Vr vs. R graph.