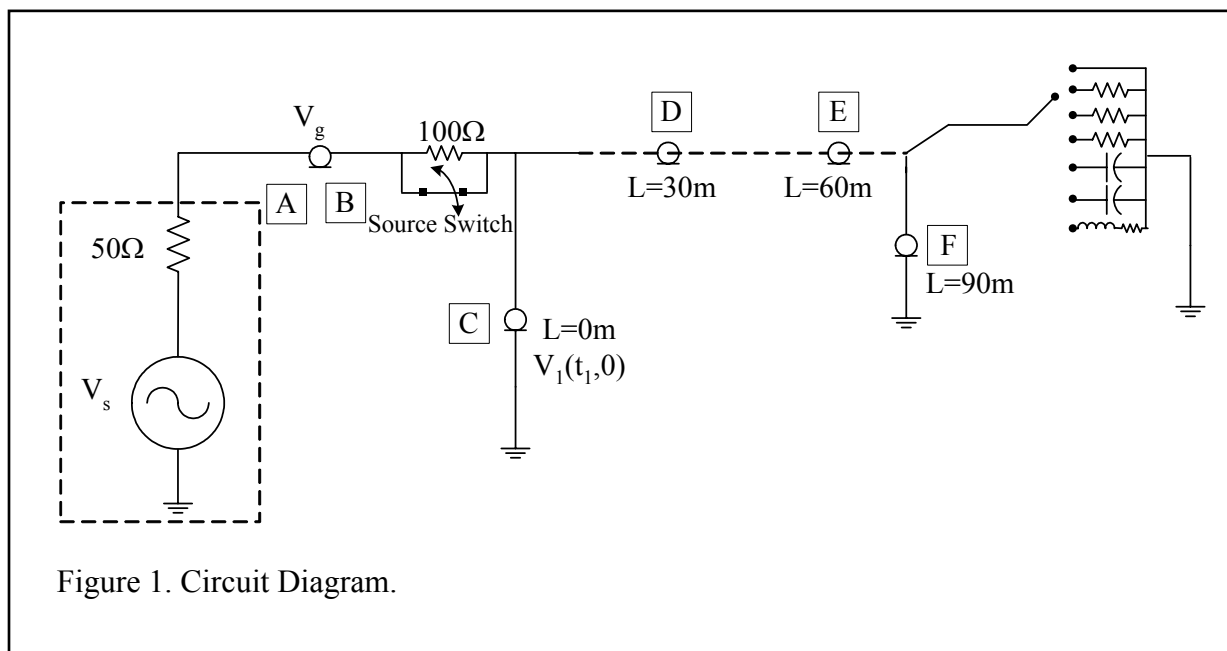# ECE320F/ECE357S Waves on Transmission Lines - Laboratory Worksheet

Section A: Value of Z_o =

Section B: Generator Voltage V_g =
$$V_1(t,0) =$$
$$R_{series} =$$
$$Z_o =$$

Section C: Refer to the figure below;

Figure 1. Circuit Diagram.

1. Plot V vs. t at C, D, E, F for $R_L = 50\Omega$.
2. Plot V vs. z for pertinent values of t (complete at home).

Section D: Complete the following table;

z (m)	t (s)	υ(m/s)
C		
D		
E		
F		

Average υ =

Dielectric Constant of the insulating medium (ε) =

R_L (Ω)	Γ_L(meas) = $V_{reflect}/V_{incident}$	Γ_L(calculated)
0 Ω		Complete at home
20 Ω		Complete at home
100 Ω		Complete at home
∞		Complete at home

Section E: Complete the following table;

1. Plot V vs. t at C for R_L = 0 Ω, 20 Ω, 100 Ω and ∞
2. Plot V vs. t at F for R_L = 20 Ω, 100 Ω and ∞
3. Plot V vs. t at C, D, E, and F for R_L = 20 Ω.
4. Plot V vs. z for pertinent values of t for R_L = 20 Ω (complete at home).

Section F: Plot V vs. t at $C, D, E,$ and F (complete at home).

Section G:

Complete the following table with the line terminated in a short circuit:

Frequency (MHz)	Length (λ)	V_1	V_g

Complete the following table with the line terminated in a 0.01 µf capacitor:

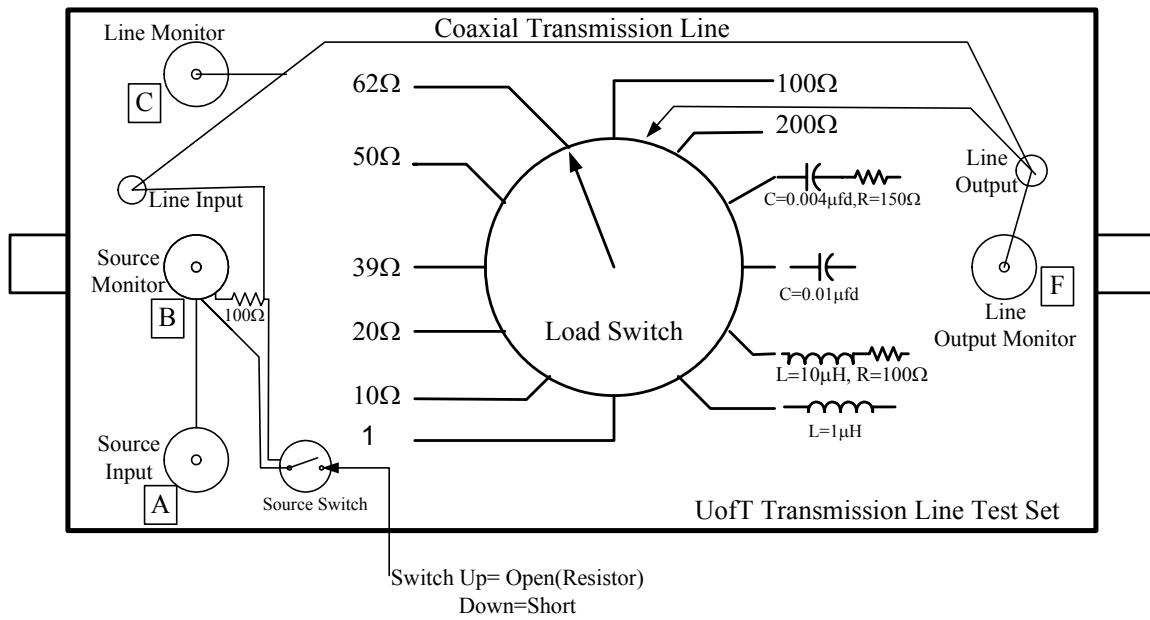| Frequency (MHz)	Length (λ)	V_1	V_g

Figure 2. Transmission Line Test Set