Worksheet (L3001B Microwave Circuits)

Student's Name:_____Group No.:_____Subgroup No._____(A/B)

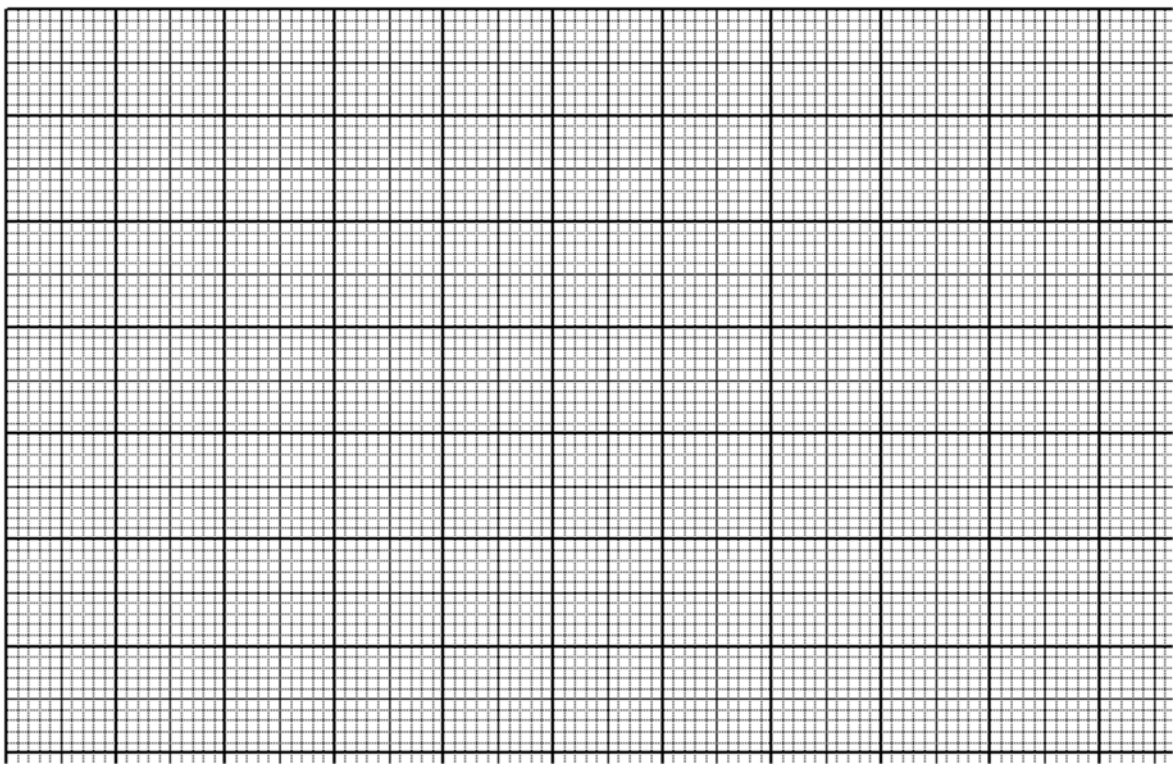
Measurement Data:

Tuning Voltage (V)		5	10	15	20	25
Experiment 4.2:Calibration of Microwave Swept Frequencies and Detector Output Power						
Frequency (GHz)						
P1	Detector Voltage					
	Power					
Experiment 4.3: Directional Coupler						
P2	Detector Voltage					
	Power					
P3	Detector Voltage					
	Power					
P4	Detector Voltage					
	Power					
Experiment 4.4: Unknown Loads						
P4SC (short-circuit)	Detector Voltage					
	Power					
P4A	Detector Voltage					
	Power					
P4B (optional)	Detector Voltage					
	Power					
P4C (optional)	Detector Voltage					
	Power					
Experiment 4.5: Low Pass Filter						
P4LPF	Detector Voltage					
	Power					
P5LPF	Detector Voltage					
	Power					

Parameter Calculations:

Tuning Voltage (V)	5	10	15	20	25	**Average**
Experiment 4.3: Directional Coupler						
Insertion Loss (dB)						
Coupling (dB)						
Directivity (dB)						
Isolation (dB)						
Experiment 4.4 Unknown Load A						
Γp						
RT (in ohms)						
Experiment 4.5: Low Pass Filter						
Γp						**NA**
Tp						**NA**
10 $\log_{10}$(Tp) in dB						**NA**

Frequency Response of the Low Pass Filter (LPF)



Frequency (GHz)

Your answers to questions in manual

Question 1. How does radiation from microwave circuits cause health hazards? What is the safety limit for microwave radiation?

Ans:

Question 2. When connecting and disconnecting high precision SMA connectors what is the technique that you should implement?

Ans:

Question 3. Identify the modules provided in the microwave trainer kit MST532 and write appropriate letters beside the symbols in Figure 3. (You may use a rough sketch if needed.)

Ans:

Question 4. Given your value of Tp, describe where the wave energy in the directional coupler circuit is going besides port 2?

Ans:

Question 5. Which setup in Figure 6 should be used to measure the power in the **FORWARD** wave?
Ans:

Question 6. Record the average values (averaged over all the five frequency points) of *insertion loss*, *coupling*, *directivity* and *isolation* (in dB) of the coupler with reference to port 1.

Ans:

Question 7. Given that the device ZT comprises a resistor with a pure resistance of $ZT=RT$ and the characteristic impedance of the microstrip line is $Z0=50\Omega$, what is the value of the resistor at port A?

Ans:

Question 8. What are the average values of impedances at ports B and C?

Ans:

Question 9. Identify the circuit function of the device LPF.

Ans:

Question 10. At what frequency does its power transmission coefficient fall by 3 dB wrt to the maximum value?

Ans: