ELEC 302-81
Lab 1
Power in AC Circuits

January 16, 2013

Date Performed:	January 14, 2013
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1 Introduction

State the theoretical principles or concepts that this experiment is trying to prove.

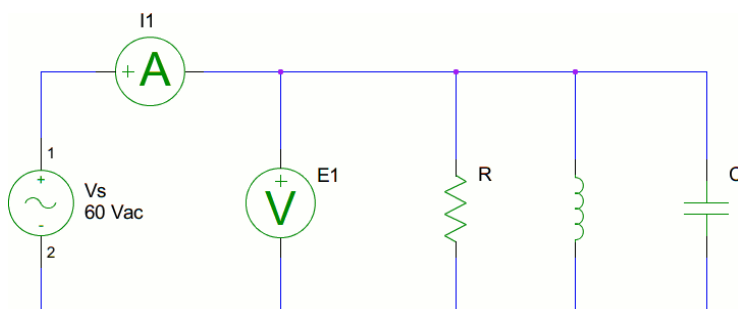May also be to gain experience in using the lab equipment.

2 Circuit Tested

Figure 1: Parallel RLC Circuit Configuration

R	L	C
Ω	H	μF
1200	0.8	—
1200	0.8	2.2
1200	0.8	4.4
1200	0.8	8.8
1200	1.6	—
1200	1.6	2.2
1200	1.6	4.4
1200	1.6	8.8

Table 1: RLC Values for circuit in Figure 1

3 Procedure

Enough description that someone familiar with basic electrical measurements could reproduce the experiment.

Sequential

Paragraph form is usually preferred.

Write in past tense.

Do not just copy the instruction lists in the lab assignments.

Learn to be brief

4 Comparison with Theoretical

Measured values versus what would be predicted by a theoretical analysis of the circuit performance.

For example, compare the measured resistance of two resistors connected in series with $R_1 + R_2$

Express comparison as a %error.

$$\%\text{deviation} = \frac{\text{measured} - \text{theoretical}}{\text{theoretical}} \times 100\%$$

5 Conclusions

What theoretical principle or concept did this experiment prove?

Within experimental error, this laboratory exercise has demonstrated that the equivalent resistance of two resistors connected in series is equal to the sum of the individual values.

6 Calc

R	L	C	I_1	E_1	P	θ	S	Q	p.f.
Ω	H	μF	A	V	W	deg	VA	VAR	
1200	0.8	—	0.210	60	4.56	68.77	12.58	11.73	0.36
1200	0.8	2.2	0.164	60	4.56	62.48	9.86	8.75	0.46
1200	0.8	4.4	0.122	60	4.56	51.65	7.34	5.76	0.62
1200	0.8	8.8	0.076	60	4.56	-2.67	4.56	-0.21	1.00
1200	1.6	—	0.114	60	3.39	60.27	6.84	5.94	0.50
1200	1.6	2.2	0.075	60	3.39	41.06	4.50	2.96	0.75
1200	1.6	4.4	0.057	60	3.39	-0.50	3.39	-0.03	1.00
1200	1.6	8.8	0.115	60	3.39	-60.51	6.89	-6.00	0.49

Table 2: Calculated Data

7 Results

R	L	C	I_1	E_1	P	θ	S	Q	p.f.
Ω	H	μF	A	V	W	deg	VA	VAR	
1200	0.8	—	0.206	60.9	4.53	68.0	12.55	11.21	0.37
1200	0.8	2.2	0.158	60.9	4.56	60.9	9.62	8.19	0.49
1200	0.8	4.4	0.117	60.9	4.59	49.0	7.13	5.28	0.66
1200	0.8	8.8	0.081	61.0	4.65	-4.4	4.94	-0.36	1.00
1200	1.6	—	0.116	61.0	3.94	55.4	7.08	0.37	1.00
1200	1.6	2.2	0.079	61.0	3.96	32.8	4.82	2.55	0.84
1200	1.6	4.4	0.067	61.0	3.99	-6.6	4.09	-0.46	1.00
1200	1.6	8.8	0.124	61.2	4.05	-57.4	7.60	-6.33	0.54

Table 3: Experimental Data