

Table 1a: Pre-lab questions - self inductance

	Large loop	Small loop
Self Inductance	$8.56 \cdot 10^{-7}$ H	$7.96 \cdot 10^{-9}$ H

As it is a good conductor, we can assume $\mu_r=1$ and thus $\mu=\mu_0$

Table 1b: Pre-lab questions - loop currents $I=V/(R+2\pi f \cdot L)$ $V=$

Frequency	Current A	Frequency	Current A
1 MHz	0.360	100 MHz	0.034
2 MHz	0.328	200 MHz	0.018
5 MHz	0.259	500 MHz	0.007
10 MHz	0.192		
20 MHz	0.127		
50 MHz	0.063		

Table 1c: Pre-lab questions - electromotive force

Magnetic field (30 mm)	$H=1.03$ A/m
Magnetic flux	2.66×10^{-8} Wb
Electromotive force	1.67V
Observed voltage	2.74V

Figure P1: Pre-lab questions - equivalent circuit

Table 2: Results - experiment 1

	Frequency	Reading dB μ V	Probe factor	Current dB μ A	Current mA
Long	Side 1	V_d	R_d	V_d-R_d	
	1 MHz	72.35	-20 dB Ω	92.35	41.45
	2 MHz	78.2	-14 dB Ω	94.2	51.29
	5 MHz	84.27	-6 dB Ω	90.27	32.62
	10 MHz	87.86	0 dB Ω	87.86	24.72
	20 MHz	90.12	6 dB Ω	84.12	16.07
	50 MHz	91.55	14 dB Ω	77.55	7.54
	100 MHz	90.01	18 dB Ω	72.01	3.99
	200 MHz	86.16	20 dB Ω	66.16	2.03
	500 MHz	76.10	21 dB Ω	56.1	0.64
	short	Side 2			
5 MHz		84.62	-6 dB Ω	79.62	9.57
50 MHz		85.6	14 dB Ω	71.6	3.8
500 MHz		92.45	21 dB Ω	71.45	3.74
Long	Side 3				
	5 MHz	84.83	-6 dB Ω	90.83	34.79
	50 MHz	94.28	14 dB Ω	80.28	10.33
	500 MHz	89.03	21 dB Ω	78.03	7.97
Short	Side 4				
	5 MHz	84.7	-6 dB Ω	90.7	34.28
	50 MHz	84.3	14 dB Ω	70.3	3.27
	500 MHz	81.35	21 dB Ω	60.35	1.04

Table 3: Results - experiment 2

Position	V_{pk-pk}
0	32.6
10 mm	34
20 mm	36.05
30 mm	40.2
40 mm	47.9
50 mm	63.9
60 mm	79.37
70 mm	26.04
80 mm	18.5
90 mm	63.1
100 mm	43
110 mm	27.5
120 mm	19.5
130 mm	14.9
140 mm	11.2

150 mm	9.0
160 mm	7.4
170 mm	6.7
180 mm	5.9
190 mm	5.4
200 mm	4.4
210 mm	3.8
220 mm	3.2
230 mm	2.8
240 mm	2.5
250 mm	2.25
260 mm	2.15
270 mm	1.95
280 mm	1.85
290 mm	1.70
300 mm	1.70