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| 五、数据记录：  组号： 19 ；姓名 吴艇  C= L=   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | f/Hz |  | |  | | f/Hz |  | |  | | | u=mV | i/mA | u/mV | i/mA | u=mV | i/mA | u/mV | i/mA | | 1600 | 75.6 | 0.756 | 150 | 0.750 | 2400 | 700 | 7.00 | 822 | 4.11 | | 1700 | 88.8 | 0.888 | 173 | 0.865 | 2450 | 582 | 5.82 | 776 | 3.88 | | 1800 | 105 | 1.05 | 207 | 1.04 | 2500 | 456 | 4.56 | 688 | 3.44 | | 1900 | 135 | 1.35 | 262 | 1.31 | 2550 | 371 | 3.71 | 612 | 3.06 | | 2000 | 178 | 1.78 | 330 | 1.65 | 2600 | 309 | 3.09 | 531 | 2.66 | | 2100 | 256 | 2.56 | 436 | 2.18 | 2700 | 229 | 2.29 | 415 | 2.08 | | 2150 | 304 | 3.04 | 512 | 2.56 | 2800 | 182 | 1.82 | 343 | 1.72 | | 2200 | 374 | 3.74 | 591 | 2.96 | 2900 | 155 | 1.55 | 293 | 1.47 | | 2250 | 483 | 4.83 | 682 | 3.41 | 3000 | 131 | 1.31 | 259 | 1.200 | | 2300 | 600 | 6.00 | 763 | 3.82 | 3100 | 120 | 1.20 | 230 | 1.15 | | 2350 | 723 | 7.23 | 819 | 4.10 | 3200 | 109 | 1.09 | 211 | 1.06 |   时：  共振频率的理论值 2400Hz ;共振频率测量值 2377Hz ; 715mV ;  达到共振时： 10.9V 11.1V  时：  共振频率的理论值 2400Hz ;共振频率测量值 2375Hz ; 818mV ;  达到共振时： 6.35V 6.49V |
| 六、数据处理   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | f/Hz |  | |  | | f/Hz |  | |  | | | u=mV | i/mA | u/mV | i/mA | u=mV | i/mA | u/mV | i/mA | | 1600 | 75.6 | 0.756 | 150 | 0.750 | 2400 | 700 | 7.00 | 822 | 4.11 | | 1700 | 88.8 | 0.888 | 173 | 0.865 | 2450 | 582 | 5.82 | 776 | 3.88 | | 1800 | 105 | 1.05 | 207 | 1.04 | 2500 | 456 | 4.56 | 688 | 3.44 | | 1900 | 135 | 1.35 | 262 | 1.31 | 2550 | 371 | 3.71 | 612 | 3.06 | | 2000 | 178 | 1.78 | 330 | 1.65 | 2600 | 309 | 3.09 | 531 | 2.66 | | 2100 | 256 | 2.56 | 436 | 2.18 | 2700 | 229 | 2.29 | 415 | 2.08 | | 2150 | 304 | 3.04 | 512 | 2.56 | 2800 | 182 | 1.82 | 343 | 1.72 | | 2200 | 374 | 3.74 | 591 | 2.96 | 2900 | 155 | 1.55 | 293 | 1.47 | | 2250 | 483 | 4.83 | 682 | 3.41 | 3000 | 131 | 1.31 | 259 | 1.200 | | 2300 | 600 | 6.00 | 763 | 3.82 | 3100 | 120 | 1.20 | 230 | 1.15 | | 2350 | 723 | 7.23 | 819 | 4.10 | 3200 | 109 | 1.09 | 211 | 1.06 |   由表格得：当时，  故，,，，  ①  ②，  ③  由  共振频率理论值和测量值体现在数据记录栏。 |
| 七、结果陈述：  本次实验测量得共振频率，以及在共振时与的值，都与理论值接近，在一定误差的范围内。 |
| 八、实验总结与思考题  总结：本次实验主要测量在不同信号频率下的电阻两端以及在共振频率下电容和电感两端的电压，在数据处理的时候品质因数需要通过理论计算和实验数据计算。  思考题：  1.可以用哪些试验方法判别电路处于谐振状态？  答：测量端口电压和电流，谐振状态下表现为纯电阻性（看示波器R两端电压达到最大值）；电源电压与电流同相位时处于谐振状态。  2.实验中，当RLC串联电路发生谐振时，是否有(为电阻上的电压，为电源输出电压）和？若关系式不成立，试分析其原因。  答：关系成立，当RLC电路发生谐振时，电感上的电压与电容上的电压是相等的，电阻上的电压灯光与电源上的电压。不成立可能是没有找准谐振点。  3.研究RLC串联电路谐振时，L值、C值和R值的选择会影响什么？实验中L值、C值和R值的选择应注意什么问题？  答：研究RLC串联电路谐振时，L值和C值会影响谐振频率和品质因数，R值会影响品质因数。所以在实验中应该注意选取合适的参数大小，使得实验顺利进行。  4.在交流电路中测电压应注意什么问题？  答：本实验中，在测量一个元件两端电压时要注意与电源“共地”。在平常实验中，在不知道具体电压时，应该选用量程较大的档位进行测量，以免电压表损坏。 |
| 指导教师批阅意见： |
| 成绩评定：     |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **预习**  （20分） | **操作及记录**  （40分） | 数据处理20分 | 结果陈述实验总结10分 | 思考题  10分 | **报告整体**  **印 象** | **总分** | |  |  |  |  |  |  |  | |