

Appendix 3 - Raw Code

| Day 2 | | Day 3 |
|----------------|--------------|-----------|
| 19mA | | 19mA |
| Copper | | |
| Frequency (Hz) | Voltage (mV) | Frequency |
| 62500 | 67.29 | 62500 |
| 60500 | 63.94 | 60500 |
| 58500 | 61.22 | 58500 |
| 56500 | 57.21 | 56500 |
| 54500 | 54.54 | 54500 |
| 52500 | 51.79 | 52500 |
| 50500 | 49.24 | 50500 |
| 48500 | 46.68 | 48500 |
| 46500 | 44.24 | 46500 |
| 44500 | 41.85 | 44500 |
| 42500 | 40.04 | 42500 |
| 40500 | 37.84 | 40500 |
| 38500 | 35.97 | 38500 |
| 36500 | 33.75 | 36500 |
| 34500 | 31.16 | 34500 |
| 32500 | 29.19 | 32500 |
| 30500 | 27.43 | 30500 |
| 28500 | 25.95 | 28500 |
| 26500 | 23.61 | 26500 |
| 24500 | 21.81 | 24500 |
| 22500 | 20.28 | 22500 |
| 20500 | 18.7 | 20500 |
| 18500 | 17.24 | 18500 |
| 16500 | 15.64 | 16500 |
| 14500 | 14.08 | 14500 |
| 12500 | 12.09 | 12500 |
| 10500 | 10.37 | 10500 |
| 8500 | 8.55 | 8500 |
| 6500 | 6.69 | 6500 |

Voltage (mV)

61.04

57.92

55.13

52.44

49.66

47.03

44.81

42.37

40.06

38.21

36.18

34.18

32.39

30.57

28.96

27.32

25.55

24.17

22.41

21.07

19.67

18.17

16.4

14.91

13.52

11.93

10.17

9.57

6.31

19mA

Aluminium

Frequency Voltage (mV)

| | | |
|-------|-------|-----------------------|
| 62500 | 45.28 | |
| 60500 | 42.15 | |
| 58500 | 40.86 | |
| 56500 | 38.26 | |
| 54500 | 37.05 | |
| 52500 | 35.55 | |
| 50500 | 33.71 | |
| 48500 | 32.55 | |
| 46500 | 30.74 | |
| 44500 | 30.32 | |
| 42500 | 27.81 | DEVIATION FROM LINEAR |
| 40500 | 27.21 | |
| 38500 | 25.36 | |
| 36500 | 24.66 | |
| 34500 | 22.94 | |
| 32500 | 22.28 | |
| 30500 | 20.64 | |
| 28500 | 19.96 | |
| 26500 | 18.45 | |
| 24500 | 17.87 | |
| 22500 | 16.19 | |
| 20500 | 15.36 | |
| 18500 | 14.09 | |
| 16500 | 13.24 | |
| 14500 | 11.79 | |
| 12500 | 10.71 | |
| 10500 | 9.21 | |
| 8500 | 7.93 | |
| 6500 | 6.35 | |

19mA

Brass

| Frequency (Hz) | Voltage (mV) |
|----------------|--------------|
| 62500 | 79.47 |
| 60500 | 75.63 |
| 58500 | 71.96 |
| 56500 | 68.39 |
| 54500 | 65.51 |
| 52500 | 62.41 |
| 50500 | 59.44 |
| 48500 | 56.76 |
| 46500 | 53.85 |
| 44500 | 51.21 |
| 42500 | 48.79 |
| 40500 | 46.62 |
| 38500 | 44.17 |
| 36500 | 42.21 |
| 34500 | 39.74 |
| 32500 | 37.72 |
| 30500 | 35.52 |
| 28500 | 33.64 |
| 26500 | 31.72 |
| 24500 | 29.99 |
| 22500 | 28.05 |
| 20500 | 26.2 |
| 18500 | 24.33 |
| 16500 | 22.23 |
| 14500 | 20.43 |
| 12500 | 18.54 |
| 10500 | 16.26 |
| 8500 | 14.24 |
| 6500 | 12.04 |

19mA

Steel

Frequency Voltage (mV)

62500 712.9

60500

58500 660.7

56500

54500 611.2

52500

50500 563.5

48500

46500 518.9

44500

42500 478.89

40500

38500 443.16

36500

34500 406.94

32500

30500 372.14

28500

26500 337.07

24500

22500 306.78

20500

18500 255.17

16500

14500 237.59

12500

10500 200.63

8500

6500 154.21

| Frequency | 6.5 | |
|-----------|--------------|--------------|
| | Current (mA) | Voltage (mV) |
| | 18.066 | 6.15 |
| | 18.302 | 6.31 |
| | 18.542 | 6.41 |
| | 18.687 | 6.49 |
| | 18.887 | 6.58 |
| | 18.929 | 6.61 |
| | 19.375 | 6.82 |
| | 19.597 | 6.93 |
| | 19.689 | 6.97 |
| | 19.939 | 7.09 |

| Frequency | 15 | |
|-----------|--------------|--------------|
| | Current (mA) | Voltage (mV) |
| | 18.033 | 13.34 |
| | 18.331 | 13.53 |
| | 18.632 | 13.83 |
| | 18.907 | 14.02 |
| | 19.398 | 14.25 |
| | 19.792 | 14.56 |
| | 19.938 | 14.67 |

| Frequency | Voltage Uncertainty |
|-----------|---------------------|
| 6.5 | 0.49 |
| 15 | 0.68 |
| 30 | 1.31 |
| 40 | 1.74 |

| Frequency | 30 | |
|-----------|------------|--------------|
| | Current (m | Voltage (mV) |
| | 18.252 | 24.93 |
| | 18.647 | 25.48 |
| | 18.915 | 25.86 |
| | 19.213 | 26.14 |
| | 19.574 | 26.67 |
| | 19.729 | 26.89 |
| | 19.822 | 27.01 |

| Frequency | 40 | |
|-----------|------------|--------------|
| | Current (m | Voltage (mV) |
| | 18.151 | 32.72 |
| | 18.242 | 32.57 |
| | 18.665 | 33.59 |
| | 18.905 | 33.85 |
| | 19.355 | 34.66 |
| | 19.689 | 35.26 |
| | 19.954 | 35.74 |

F=10

| Current (mA) | Voltage (mV) |
|--------------|--------------|
| 18.112 | 9.28 |
| 18.45 | 9.49 |
| 18.836 | 9.75 |
| 19.169 | 9.99 |
| 19.454 | 10.19 |
| 19.754 | 10.39 |
| 19.919 | 10.57 |

F=20

| Current (mA) | Voltage (mV) |
|--------------|--------------|
| 18.205 | 16.01 |
| 18.454 | 16.23 |
| 18.674 | 16.45 |
| 19.155 | 17.03 |
| 19.333 | 17.27 |
| 19.729 | 17.68 |
| 19.873 | 17.81 |

Frequency Voltage Uncertainty

| | |
|----|------|
| 10 | 0.07 |
| 20 | 0.11 |
| 30 | 0.12 |
| 40 | 0.16 |

F=30

Current (m Voltage (mV)

| | |
|--------|-------|
| 18.063 | 21.98 |
| 18.37 | 22.36 |
| 18.701 | 22.79 |
| 18.984 | 23.14 |
| 19.153 | 23.29 |
| 19.355 | 23.54 |
| 19.617 | 23.85 |

F=40

Current (m Voltage (mV)

| | |
|--------|-------|
| 18.103 | 28.76 |
| 18.391 | 29.13 |
| 18.559 | 29.41 |
| 18.806 | 29.81 |
| 19.31 | 30.61 |
| 19.609 | 31.09 |
| 19.959 | 31.64 |

F=10

| Current (mA) | Voltage (mV) |
|--------------|--------------|
| 18.178 | 15.23 |
| 18.214 | 15.26 |
| 18.515 | 15.51 |
| 18.839 | 15.78 |
| 19.377 | 16.23 |
| 19.797 | 16.63 |

F=20

| Current (mA) | Voltage (mV) |
|--------------|--------------|
| 18.211 | 24.86 |
| 18.349 | 25.06 |
| 18.979 | 25.9 |
| 19.231 | 26.24 |
| 19.589 | 26.73 |
| 19.914 | 27.18 |

Frequency Voltage Uncertainty

10
20
30
40

F=30

Current (m Voltage (mV)

| | |
|--------|-------|
| 18.131 | 34.02 |
| 18.277 | 32.29 |
| 18.509 | 34.73 |
| 19.292 | 36.15 |
| 19.574 | 36.68 |
| 19.743 | 37 |

F=40

Current (m Voltage (mV)

| | |
|--------|-------|
| 18.199 | 44.21 |
| 18.455 | 44.83 |
| 18.943 | 46.04 |
| 19.145 | 46.5 |
| 19.607 | 47.65 |
| 19.812 | 48.15 |

F=10

Current (m Voltage (mV)

| | |
|--------|--------|
| 18.018 | 185.98 |
| 18.515 | 191.61 |
| 18.624 | 192.79 |
| 18.744 | 194.16 |
| 19.028 | 197.41 |
| 19.249 | 199.88 |
| 19.847 | 206.79 |

F=20

Current (m Voltage (mV)

| | |
|--------|--------|
| 18.306 | 276.15 |
| 18.426 | 278.09 |
| 18.952 | 286.89 |
| 19.218 | 291.29 |
| 19.412 | 294.49 |
| 19.706 | 299.38 |
| 19.912 | 302.86 |

F=30

Frequency Voltage Uncertainty

10

20

30

40

F=40

Current (m Voltage (mV)

| | |
|--------|--------|
| 18.149 | 352.51 |
| 18.256 | 354.74 |
| 18.567 | 361.45 |
| 18.797 | 366.37 |
| 19.307 | 377.29 |
| 19.684 | 385.52 |
| 19.755 | 387.01 |

Current (m Voltage (mV)

| | |
|--------|--------|
| 18.013 | 433.76 |
| 18.294 | 441.17 |
| 18.731 | 453.14 |
| 18.925 | 458.34 |
| 19.175 | 465.02 |
| 19.316 | 468.84 |
| 19.886 | 484.38 |