Messprotokoll 245 Marius Pfeiffer Robert Grosch 05.11.2024

Vorberechnung, max. Spannung

Widerstand Spule: $2.6 \pm 0.1\ \Omega$

Max. Strom: 5 A

$U = R \cdot I \Rightarrow U = 2.6\ \Omega \cdot 5\ A = 13\ V$ ✓

Aufgabe 2

a) Scheitelspannung in Abh. von Frequenz

Frequenz [Hz]	Sp-Sp [V]
3.0 ± 0.3	0.78 ± 0.04
6.05 ± 0.15	2.80 ± 0.06
9.05 ± 0.12	5.04 ± 0.04
12.10 ± 0.09	7.54 ± 0.16
15.00 ± 0.12	9.84 ± 0.16

✓

b) Scheitelspannung in Abh. von B-Feld

$f = (10.05 \pm 0.12)$ Hz

Strom [A]	Sp-Sp [V]
0.50 ± 0.01	0.74 ± 0.02
1.00 ± 0.01	1.50 ± 0.08
1.50 ± 0.01	2.22 ± 0.04
2.00 ± 0.01	3.00 ± 0.09
2.50 ± 0.01	3.68 ± 0.04
3.00 ± 0.01	4.40 ± 0.08
3.50 ± 0.01	5.28 ± 0.08
4.00 ± 0.01	6.00 ± 0.12
4.50 ± 0.01	6.80 ± 0.16

✓

Aufgabe 3

a) Sp-Sp in Abh. vom Winkel

Winkel [°]	Sp-Sp [mV] (±2%)
0.0 ± 2.5	320
30.0 ± 2.5	272
60.0 ± 2.5	148
90.0 ± 2.5	16
120.0 ± 2.5	184
150.0 ± 2.5	288
180.0 ± 2.5	320
210.0 ± 2.5	272
240.0 ± 2.5	156
270.0 ± 2.5	4
300.0 ± 2.5	164
330.0 ± 2.5	280

✓

5)

Freq [Hz]	Sp-Sp Ind. [mV]	Sp-Sp HH [V]	I HH [mA]
20.00 ± 0.12	107 ± 1	5.44 ± 0.08	23.02 ± 0.02
40.00 ± 0.15	197 ± 1	5.68 ± 0.08	20.56 ± 0.02
60.00 ± 0.15	257 ± 1	5.68 ± 0.08	17.68 ± 0.02
80.00 ± 0.15	293 ± 1	5.68 ± 0.24	15.12 ± 0.02
100.0 ± 0.2	317 ± 1	5.44 ± 0.16	13.03 ± 0.02
120.0 ± 0.2	331 ± 1	5.36 ± 0.08	11.35 ± 0.02
140.0 ± 0.4	341 ± 1	5.36 ± 0.08	10.05 ± 0.02
160.0 ± 0.4	347 ± 1	5.36 ± 0.08	8.98 ± 0.02
180.0 ± 0.4	352 ± 1	5.36 ± 0.08	8.05 ± 0.02
200.0 ± 0.4	355 ± 1	5.36 ± 0.08	7.37 ± 0.02
400 ± 1	367 ± 1	5.36 ± 0.08	3.81 ± 0.02
600 ± 1	371 ± 1	5.36 ± 0.08	2.56 ± 0.02
800 ± 2	373 ± 1	5.36 ± 0.08	1.92 ± 0.02
1000 ± 2	374 ± 1	5.36 ± 0.08	1.53 ± 0.02
1200 ± 4	380 ± 1	5.36 ± 0.08	1.28 ± 0.02
1400 ± 10	382 ± 2	5.36 ± 0.08	1.08 ± 0.02
1600 ± 10	382 ± 2	5.36 ± 0.08	0.95 ± 0.02
1800 ± 10	386 ± 2	5.36 ± 0.08	0.84 ± 0.02
2000 ± 10	392 ± 4	5.36 ± 0.08	0.75 ± 0.02

Aufgabe 4

a) Ohne Kompensation

Frequenz: 14.8 ± 0.2 Hz

Sp-Sp: 148 ± 1 mV

b) Mit Kompensation

Frequenz: 14.7 ± 0.3 Hz

Strom: 59.8 ± 0.2 mA

Sp-Sp: 45 ± 2 mV

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